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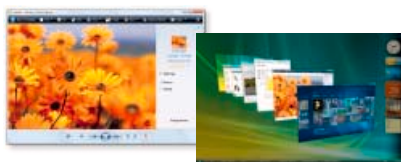
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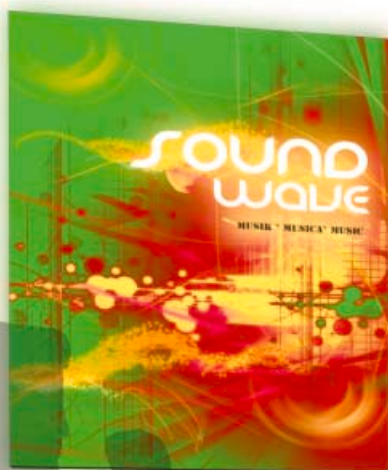
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Editorial



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Spinning the high-def novelty

The HDTV bandwagon is rolling along nicely but there's something very familiar about the whole event

Those of you who remember the arrival of affordable home stereo record players in the 1960s may recall the awful – but thankfully temporary – effect they had on music production. You can recreate the effect by tuning to a radio station playing pop tunes of the era, and reeling in horror as instruments and voices fly left to right across the soundstage.

This enhanced stereo separation was intended to showcase your new stereo player and wow your friends. Which it probably did for a while before they became nauseous and made their excuses to leave. Albums such as the Moody Blues' *Days of Future Passed* were specifically commissioned as showcases for the state-of-the-art recording techniques. Years later, surround-sound formats went through a similar process, with the ubiquitous demo tracks of trains, helicopters and the like blasting out from homes across the country.

'They sounded stunning for a couple of minutes until the novelty wore off'

Moving on a few years, I remember the launch of the DVD-Audio format in the UK, where albums such as *Rumours* by Fleetwood Mac and *LA Woman* by The Doors had been remastered into 5.1-channel surround sound, with predictable results – they sounded stunning for a couple of minutes until the novelty wore off.

The latest technology to succumb to this 'showcase' phenomenon is high-definition TV (HDTV). I've nothing against this technology, but what started out as a way of preventing the picture on large flat-screen TVs look like a colour-by-numbers poster, has now started to affect the content of programs.

Every documentary, even on the most vacuous subject, is now full of gorgeous slow-panning shots, preferably including clouds, mist, hair or close-up fine detail intended to show you just how great your new HD-ready telly is.

Of course, TV has been through this process several times before: it was no coincidence that the BBC's first scheduled live colour TV broadcast in 1967 showed tennis at Wimbledon, with lots of lovely saturated colours, heaps of contrast and plenty of movement.

But HDTV is here to stay (although 3D TV won't be far behind – I can already imagine the test transmissions) and, despite all the hype, it does make the viewing experience vastly better on today's huge screens. Of course, unless you're subscribing to a cable or satellite HDTV service, getting high-definition content isn't easy, with free HDTV channels currently only available on Freesat. But if you like making home movies, then the latest generation of HD camcorders can give you an endless source of free content for a remarkably affordable initial investment, as we show in this month's group test starting on page 96.

Our cover feature this month (see page 31) explains how you can keep your installation of Windows XP running smoothly until Vista's successor, Windows 7, arrives in early 2010. It seems the market in general hasn't shared our enthusiasm for Windows Vista, with many people preferring to stick with XP for a variety of perfectly understandable reasons. One of the few remaining official ways of getting a new PC with XP installed is to buy one of the latest 'netbooks' or 'nettops' such as the Asus Eee Box (reviewed on page 62). But if you don't want to buy new hardware, we'll show you some measures you can take to reduce the risk of disaster on your existing XP PCs over the next couple of years. **PCW**

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Intel packs in whole systems

Intel has fleshed out details of chips using its next-generation Nehalem architecture, which will go into production late this year. Mainstream Nehalems will be branded Core i7 and will be among the first to ship. So will a server version called Nehalem-EP (efficient performance), which is optimised for minimum power drain.

Intel vice-president Pat Gelsinger, in a keynote at the Intel Developer Forum (IDF), showed a wafer of a second server variant called Nehalem-XP, which has eight cores on a single piece of silicon and will ship next year.

Core i7 chips, which come with a new chipset called X58, will have four cores capable of processing eight threads, and 8MB of 'smart cache', plus the new Quickpath link and on-chip three-channel DDR3 memory controller that eliminate the front-side bus (FSB) bottleneck.

Cores can be switched off when needed and run independently at the lowest necessary voltage and frequency; a Turbo mode will accelerate active cores when necessary. They will be introduced at 45nm scale.

There are four classes of Core i7 chips, codenamed Lynfield and Havendale for desktops, and Clarksfield and Auburndale for mobiles; Havendale and Auburndale have integrated graphics. Most will ship next year, when the architecture is due to shrink to 32nm. The mobiles will come with a new platform codenamed Calpella.

If these codenames confuse you, be assured that you are in good company. Gelsinger needed two attempts to get them right.

Intel has not yet finished with its current architecture. Gelsinger said a six-core Xeon due to ship in September has already broken world records.

David Perlmutter, mobile-platforms general manager, announced eight new processors designed for small form factors and Intel's first quad-core mobile processors, the 2.53GHz Core 2 Extreme QX9300 and the 2.26GHz Quad Q9100, both with 12MB of Level 2 cache and a 1,066MHz FSB.

Intel showed a motherboard with a dual-core Atom 330 processor, due in September.

But what may be Intel's most significant announcements were flagged weeks before IDF when the company announced the first eight products in an emerging family of systems on a chip (SoCs) targeted at security, storage, communications and robotics. At IDF it unveiled one targeted at consumer-electronics and mobile-internet devices (see below).

This shows Intel using the extra transistors gained from miniaturisation not simply to increase raw computing power, as it did for the best part of a quarter-century, but also to pull in tasks previously done by peripheral chips. It should make chips more specialist and systems more efficient and puts Intel head-to-head with ARM, which dominates consumer-electronics with its SoC cores.

Intel also unveiled Larrabee, its first discrete graphics processor unit (GPU), which will pitch it against Nvidia and ATI (see page 10). Whether this gets married to a CPU remains to be seen.

Clive Akass
→ Day Intel snubbed the CPU – page 19
→ More Intel news – page 10

Atom to chance its ARM on standby power

The new Archos 5 portable media player (pictured right) is what Intel would describe as a Mobile Internet Device because it can access the web via a 3G link for emails and surfing. But it is powered by a system-on-a-chip (SoC) built round an ARM Cortex processor, not by an x86 Intel.

Intel announced a consumer-electronics SoC, the CE 3100, at IDF but significantly it was targeted at the likes of set-top boxes and TVs on which power consumption is not a big issue.

Anand Chandrasekher, head of Intel's ultra-mobility group, announced that Moorestown, the next version



The Archos 5 portable media player is powered by an ARM SoC

of the Atom ultra-mobile platform, is on track for 2009 or early 2010 and will reduce standby power by a factor of 10.

Low standby drain is a big advantage of ARM cores, the next generation of which should also be products by 2010.

'Save Bletchley Park' campaign

We are backing Bletchley Park's bid to achieve the status of a national museum and secure its future.

It is the site of the famous wartime code-breaking that led to the construction of Colossus, the world's first working electronic computer. A working replica of Colossus, including a couple of original parts, is now on view at the site which houses the National Museum of Computing. But important historic buildings are in disrepair.

Simon Greenish, director of Bletchley Park, said the museum's £1m-a-year income just about matches its running costs. "But this doesn't cover all the work that needs to be done."



Bletchley Park, the wartime code-breaking centre, needs a more secure financial footing

Without additional funding the museum could close within two or three years. The hope is that with a more secure financial footing the museum could become part of the Science Museum or the Imperial War Museum. There are three ways that you can help:

- Visit the museum. A single £10 ticket allows you to visit as many times as you like for a year. The

museum is just 100m from Bletchley mainline station.

- Make a donation to Bletchley Park at www.snipurl.com/3f7gw.
- Sign a petition at the Number 10 website at www.snipurl.com/3f7h3. It already had 11,000 signatures as we went to press.

The campaign is also being backed by PCW's sister magazine, *Computeractive*.

iPhone rivals offer more pixels and bigger screen

Samsung is blurring the distinction between the digicam and phone by offering a model with an eight-megapixel sensor.

The i8510, known as the Innov8 outside the UK, for reasons clear only to Samsung, looks just like a camera from the rear (see top picture).

The front looks much like a touchscreen phone with an interface clearly influenced by the Apple iPhone. It supports 7.2Mbps/sec HSDPA and quad-band Edge/GPRS and runs

the Symbian OS. Other features include a media player, GPS and an accelerometer – used for embedded video games.

Another iPhone rival, the much-anticipated Google phone, will be available from T-Mobile on 17 September, a week before the general release, according to an unofficial T-Mobile blog. It says the HTC-made phone, which runs the Linux-based Android OS, will be called the G1. It has a 5x3in touchscreen, compared with the 2x2.75in one on the iPhone.



Is a phone? Is it a camera? It's the Samsung eight-megapixel i8510

OOXML wins battle – but has it lost format war?

Last-ditch attempts to derail the approval of Microsoft's Office Open XML (OOXML) formats as an international standard have failed, the International Standards Organisation (ISO) has ruled.

Brazil, India, South Africa and Venezuela had said an international ballot that approved them in April was rushed and poorly conducted.

The ISO said they had failed to gain the necessary two-thirds majority to overturn the earlier ruling.

The decision will mean systems using Microsoft's OOXML and the rival Open Document Format (ODF) will be able to compete for lucrative government contracts.

But if OOXML, introduced with Microsoft Office 2007, has won the

battle it could still lose the war.

A Service Pack 2 update of Office 2007 next year will provide native support for ODF, but not some parts of OOXML.

Dr Alex Brown, a British representative on the ISO voting panel, said he believed OOXML would take second place to ODF for general use.

In brief

£70 laptop

A Taiwanese manufacturer is selling what may be the world's cheapest laptop. The NPX-9000 costs \$130 (£70) in bulk. It runs Linux on a 400MHz Mips processor and comes with 1GB Flash, 128MB of Ram, an SD slot and a 7in screen; Wifi is extra. Maplin is offering a 2GB, 7in laptop similar in spec to the original Eee PC for £169.99.

\$108K innocence

Tanya Andersen has won more than \$108,000 (£58,000) in legal fees from the the Recording Industry Association of America. It demanded thousands of dollars from her after falsely accusing her of illegally downloading music.

→ www.pcw.co.uk/2224122

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<http://tinyurl.com/6y2ah2>

New ebook

Sony has unveiled the latest version of its Reader ebook tablet with a new E-Ink display that has a claimed 180° viewing angle. The 250g device was due to be on sale at Waterstone's in September for £199.99.

IBM hits 22nm

IBM has a 22nm static Ram chip, regarded as a first step to making a 22nm processor. Intel chips are due to scale down from 45nm to 32nm next year.

→ www.pcw.co.uk/2224236

'Near HD' player

Toshiba America has launched an extended detail enhancement (EDE) DVD player, the XD-E500, that scales standard recordings up to 1080p to provide pictures it claims are 'near HD', and better than those from rival models. It costs \$148 (£79).

→ www.pcw.co.uk/2224227

USB3 to hit 4.8Gbits/sec

Intel has released a tweak to the specification for next-generation USB3 links which are expected to be rated at 4.8Gbits/sec – 10 times faster than USB2. Real speeds would be much lower but USB3, also known as Superspeed USB, should be able to cope with multiple HD video streams.

USB3 products are unlikely to appear until 2009. The new tweak is a revision of the specification for the controller interface that provides a standard way of communicating with driver software.

\$100K prize



Intel's chairman Craig Barrett announced a competition aimed at getting developers to use their skills to promote social good. Four winners of the Inspire.Empower Challenge will each get \$100,000 for ideas for applying technology to education, health care, economic development and the environment.

IT gets human understanding

Intel is working on technology that will help computers to assist users by being more aware of the context of what they are doing, director of emerging platforms Mary Smiley said.

Central to the system will be a set of sensors intelligent enough to recognise objects and activities, said Andrew Chien, director of Intel research.

Currently real-time processing needs four teraflops of processing drawing 10kW of energy. The aim is to reduced this to a handheld devices drawing around 1W.

AMD upstages Larrabee GPU

AMD announced what it claimed is the world's fastest graphics card last month, evidently in an effort to spoil Intel's unveiling of its first discrete graphics processor (GPU), codenamed Larrabee. Both companies claim their products will introduce a new level of 3D graphics and visualisation.

AMD's ATI Radeon HD 4870 X2 card is said to be capable of processing 2.4 trillion floating point operations per second (teraflops). It can be doubled up using ATI CrossfireX technology to approach double the performance.

The 4870 X2 uses two 4800 GPUs, tightly linked by a version of the PCI 2.0 bus, with 2GB of

ultra-fast GDDR5 memory clocking 750MHz. Each GPU has 800 stream processors, making a total of 1,600.

This makes the maximum 48 cores of Intel's Larrabee design (see below) look piffling. Moreover Larrabee chips will not be available until 2009 or 2010.

So why is AMD (which bought ATI) and long-time rival Nvidia worried? Intel has focused on optimising Larrabee for ray tracing, which models the way light travels and interacts with the world. Intel believes this will supersede current graphics techniques.

It also sees a big advantage in the fact that the cores can be programmed using the familiar x86

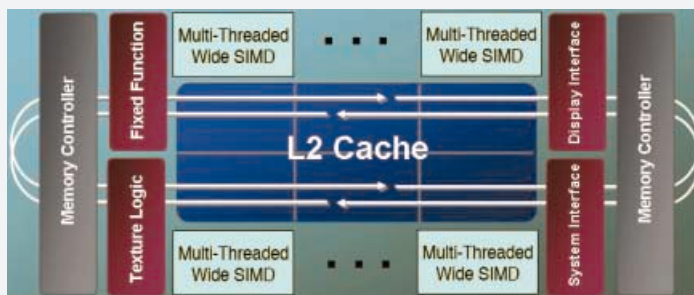
instruction set, albeit with a few new extensions. This could make Larrabee attractive for non-graphics tasks that can benefit from the high parallelism.

GPUs in the past have been difficult to use for this work as they could not be directly programmed: you could only address them through Application Programming Interfaces (APIs). Crafty use of these can trick the GPU into doing non-graphics work, but it is neither efficient nor easy.

Nvidia's recent GPUs are programmable using a C-like language called Cuda. One rumour circulating the Intel Developer Forum was that Nvidia is planning an x86-based GPU.

Inside Intel's graphics processing unit

This diagram shows the main elements of Intel's Larrabee graphics processing units. They will have between four and 48 cores based on a Pentium x86 design, simplified because graphics tasks generally do not require the out-of-order scheduling of general-purpose processors.



Each core has a scalar processing unit, operating on one item of data at a time, and a 512-bit vector unit capable of processing 16 items at a time. They share 32KB of Level 1 cache, which is linked directly

to the Level 2 cache linking all the cores. Larrabee contains some hard-wired logic for tasks such as texture processing. All this, and the memory controller, is linked by a 1,028-bit bidirectional bus.

320GB solid-state drives planned

Intel is to launch its first solid-state hard drives (SSD) with capacities of up to 320GB available as soon as next year.

The first Intel drives, the X18-M and X-25M will ship in 1.8in and 2.5 in sizes as slot-in replacements for laptop and desktop SATA drives. The first offerings will store 80GB and 160GB.

The M in the part number marks them as Multi-Level Cell (MLC), which means more than one bit can be stored per cell. Within 90 days Intel will ship drives

with an E (for Extreme) part number, indicating a single-level cell (SLC).

SLC parts are faster and more reliable than MLC but have lower data density, so first offerings will have capacities of 32GB and 64GB.

Troy Winslow, Intel's marketing manager for NAND memory, said: "This is just the first iteration of our roadmap. We will be developing a range of products."

He said that in tests the SSDs were delivering between 30 and 34 minutes extra battery life.

Bluetooth drinks less

Cambridge-based CSR says a tweak to Bluetooth technology embedded on Intel motherboards can boost battery life by 30 minutes.

The existing design prevents a notebook entering a sleep state known as C3 because it needs to be polled regularly to see if it has any data to send.

CSR has adapted Intel technology called USB Sideband Deferring to ensure that polling takes place only when there is data to pass.

Lenovo joins mini bandwagon



Lenovo jumped onto the ultraportable bandwagon with two new models as analysts Gartner predicted a massive growth in sales of the format.

Gartner defined what it called 'mini-notebooks' as having a screen size of between five and 10 inches and running a full operating system such as Windows XP or Linux.

It predicted sales of five million this year, eight million in 2009, and as many as 50 million in 2012. Sales of full-sized notebooks will not be hit at first because of their better performance, but smaller

Lenovo's new mini range offers a choice of colours designed to appeal to buyers on the high street,

models could start taking market share by 2011 as they gain power.

The figures do not include what Gartner calls 'micro-information devices' with a screen size of three to five inches, such as the iPhone.

Gartner research director George Shiffler said vendors might have to seek new outlets for mini-notebooks, such as gadget shops.

Lenovo evidently feels it is targeting a new class of buyers

with its £279 Ideapad S9 and £319 Ideapad S10, which have 8.9in and 10.2in screens respectively. They come in a range of colours clearly aimed at the consumer market.

They will feature up to 1GB of memory, a 160GB hard disk or 4GB SSD and run Windows XP or Linux. They will be available from October.

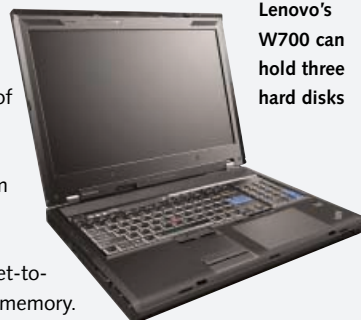
The mini rage is spreading to desktop models too. We review the desktop version of the Asus Eee PC on page 62 and Fujitsu-Siemens has launched mini-desktop range called the Emprimo Q Series – for details see <http://tinyurl.com/nzqbr>.

W700 wows graphics workers

Small notebooks may be catching the headlines at the moment but Lenovo's Thinkpad W700 mobile workstation is going to have a lot of people drooling, even if it does weigh a hefty 3.8kg.

Designed for graphics professionals, it comes with a 17in 1,920x1,200 (WUXGA) screen and a colour calibrator, with a Wacom digitiser tablet built in to the palm-rest for fine pen control.

It can hold three hard disk drives, if you dispense with the optical drive, and will be available with Nvidia Quadro FX graphics, Intel's yet-to-launch mobile quad-core chip, up to 8GB of Ram and 2GB of Turbo memory. → <http://www.lenovo.com>



Lenovo's W700 can hold three hard disks

19-hour battery life looks a heavy deal

Dell had been expected to include a mini-notebook in its latest range, which was launched last month. But its new 12.1in Latitude E4200 would not fit Gartner's definition, (see above) though Dell described it as an ultraportable.

Still, it weighs just under 1kg and is the lightest ever by the company. Its 13.1in stablemate, the E4300, weighs 1.54kg.

A more headline-grabbing claim for its stablemate, the semi-rugged Latitude E6400, was that it can run for 19 hours between charges (or a day's work, as one Stakhonovite US hack observed). This turned out to mean 10 hours with a single

nine-cell battery, and a further nine if you clip on an auxiliary.

No weights were given for the batteries, but the total weight for a four-cell battery model is 2.3kg.



Between these are the 14.1in E6400 and 15.4in E6500, which are described as desktop replacements, and the slightly cheaper 14.1in E5400 and 15.4in E5600.

Dell also launched two high-performance Precision workstations, the 14.1in M4200 and 15.4in M4400, starting at £889 and £939 respectively.

→ For full specifications see www.dell.com

Dell's new Latitude range includes a 12.1in laptop weighing less than 1kg

Spherical camera arrives

US researchers have developed a spherical camera with some of the advantages of the human eye. The sensor is curved to fit the interior of the sphere, like a retina, offering a wide angle of view with minimal distortion using a single lens.

Initial uses are likely to be military but the technology could form the basis of an artificial eye.

→ www.pcw.co.uk/2223464



Photoviewer

Epson 160GB P-7000 and 80GB P-6000 Photoviewers incorporate a 4in 640x480 LCD screen to allow photographers to store and view images when on the move. They also include software for editing, watermarking and outputting to a printer. Respective prices are £549.99 and £449.99 ex Vat.

→ www.epson.co.uk

Share a hub

Lindy's £34.99 USB2 four-port sharing hub allows two machines to share scanners, printers and other peripherals. You switch the hub to whichever machine needs access; either or both can be a Mac or PC.

→ www.lindy.co.uk



Epson Wifi MFD

Epson's Stylus SX600FW combined printer, scanner, copier and comes with Wifi and wired Ethernet for easy sharing over a network. It also allows you to buy individual colour cartridges at £7.99 each, so you only replace the colours you need. It costs £149.99.

Cyberpower recommends Windows Vista™ Home Premium



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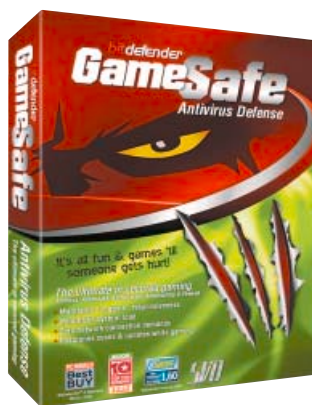
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 P8400 3MB L2 Cache, 2.26Ghz £ 835
 * Images for display only.



CyberPOWER Inc.



Home focus for Bit Defender

The latest version of the Bit Defender suite provides support for family networks, with central-management features normally found only in corporate products, according to UK country manager Nick Billington.

Bit Defender 2009 will be sold through high-street stores including Staples, Woolworths and Asda to attract home users. "We think that people have tended to see us as a corporate product," Billington said.

A new £14.95 edition called Gamesafe is designed for gamers, optimising performance while not compromising on security.

There are three versions of Bit Defender, all also available next month: Anti-Virus 2009 at £15.75; Internet Security 2009, which includes anti-spam, parental control, and a firewall for £25.75; and Total Security. This combines both these products plus tune-up and backup tools, for £35.95. All come with three licences.

→ www.bitdefender.co.uk

Snooping by other means

Delegates at the Defcon conference in Las Vegas were told that hacking is not the only way to steal information.

Methods demonstrated included a mic that could allow an attacker to identify a key press by sound and an iPhone that could be sent to a company to monitor its Wifi.

More devious was a laser pointer, a light sensor and an audio amplifier that could eavesdrop by turning a window into a mic.

DNS flaw 'threatens finance'

The Domain Name System (DNS) flaw that shook the web security industry is more dangerous than previously believed and existing patches may only be a stopgap, according to the man who discovered it.

The problem lies in how a DNS server translates a textual web address into an IP address that can be used by routers. It allows an attacker to redirect traffic from legitimate sites. Reports have highlighted the way this might be used for phishing attacks, such as mimicking a bank site.

But security researcher Dan Kaminsky, who kept quiet about the flaw for months while security firms prepared fixes, said it could expose emails, spam filters, FTP transfers, remote logins, and tasks that use Secure Socket Layer (SSL) services – which affect nearly all online financial transactions.

Software vendors, service providers and major companies have deployed patches to servers and hundreds of millions of PCs, but Kaminsky warned that these may only stave off attacks until a better defence can be found.

Kaminsky told a Black Hat conference in Las Vegas that the DNS flaw could be the first of many potentially catastrophic vulnerabilities to appear over the coming years as systems are probed for weaknesses.

"Even with DNS fixed, there are other scenarios in which unencrypted IP traffic is lost to an attacker... The attacker is capable of way more than he should be," he said.

→ **Check the security of your DNS server by visiting Kaminsky's blog site at www.doxpara.com.**

Peeping Tom cases prompt fears for UK

Two reports in the past month of Peeping Tom hackers spying on young women through their webcams have raised concerns about how many similar offences are going undiscovered.

Neither case occurred in Britain but the rarity of convictions in the UK is in itself a matter for concern.

Both men in the latest cases appear to have left themselves wide open to discovery. One, who sent his 17-year-old victim a Trojan by email and then tried to blackmail her, was sentenced to four years by a court in Cyprus.

The other was caught in the US because his victim noticed that her PC had slowed down after she asked him to fix it. He used commercial Log Me In remote access software and installed a client module on her computer.

A Log Me In spokesman said the company placed a high priority on security and privacy. "We advise our users to never share their passwords, or their computers, with anyone. Further, no software – Log Me In or any other program – should ever be installed on a computer without the consent of the owner."

The Home Office does not give numbers for 'traditional' Peeping Tom convictions in Britain, which are logged under a 'miscellaneous' category of recorded sex offences



Use with care... a webcam can open a window to your world

Peeping Toms represent only a small proportion, it's a fair bet that many are computer literate.

Graham Cluley, senior technology consultant at Sophos, points out that software for remote monitoring of children or spouses is easily available on the web and could also be used by Peeping Toms.

In addition, there has been "a dramatic rise in the number of new viruses, worms and Trojan horses designed to spy on innocent users: whether it be via their webcam, emails, or key presses".

Perhaps some good, if old-fashioned, advice, is to "never do in front of your webcam what you would not do in the street".

that do not involve physical contact. These hover at around 10,000 a year in the UK, which may only be a fraction of the number committed. Even if

Parents urged to spy on kids' surfing

Parents have been urged to monitor their offsprings' online activity to ensure their children's safety and that they themselves do not fall foul of the law.

More than eight in 10 parents questioned in a Yougov survey said they chose to believe what their children told them rather than checking what they were doing.

Michael Phillips, product director of www.broadbandchoices.co.uk, which ordered the survey, said parents may be held liable for illegal downloads and that simple checks could help protect children who are using the internet to build friendships.

→ www.pcw.co.uk/2223195

→ **See review of Qstarz**

BT-Q1300 GPS logger page 70

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- SSL VPN



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Microsoft admits open threat

Open-source software presents a growing threat to Microsoft's business, the company warned this month – just days after announcing that it is to sponsor the open-source Apache Software Foundation.

The warning came in Microsoft's annual report, which claimed that open-source vendors are stealing the company's ideas and benefiting from its intellectual property.

It said open-source vendors did not have to fund the full costs of developing software that they could sell at nominal cost and then make money on

complementary services and products. "Some of these firms may build upon Microsoft ideas that we provide free or at low royalties," it said.

The report also said Microsoft's revenues and operating margins might drop as open source gains market acceptance. It added that open-source copies of its applications, with fewer functions, were also forcing down prices.

This may be an oblique reference to the free Open Office suite, and the fact that you can now buy the Home and Student edition of Microsoft Office for

around £80 with three licences – less than £30 per user.

Why has the company become a \$100,000-per-year platinum sponsor of the ASF, whose Apache web server software outsells Microsoft Internet Information Server (IIS)?

Sam Ramji, senior director of Microsoft's platform strategy, blogged that the money would help ASF developers to focus on "writing great software".

But some observers suggested that Microsoft hoped to appease US and European anti-monopoly regulators, and that it could itself use some ASF code.

Windows XP outsells Vista

Windows XP systems for businesses are still outselling those running Vista – even though the older operating system was withdrawn from high-street sales in June.

Jane Bradburn, HP Australia's market development manager of commercial notebooks, XP machines, said machines were sold with a Vista business licence but with XP pre-loaded.

This would show up in Microsoft books as a Vista sale, casting doubt on how well the new operating system is selling.

Forrester Research analyst Thomas Mendel estimates that only 8.8 per cent of enterprises have adopted Vista, a claim dismissed as "sensationalist" by Microsoft, which claims on its Vista blog that it has sold more than 180 million copies. *Iain Thomson*

SQL Server 2K8 nears release

The latest version of Microsoft's SQL Server database management system has been released for manufacture, a prelude to the final release. A 180-day trial version of the software has been made available for download on the MSDN and Technet sites.

SQL Server 2008 will be the same price as its predecessor and is said to be faster and easier to manage. It has new auditing tools and supports policy-based management and large-scale data warehousing. See review p126 → www.pcw.co.uk/2223411

Windows 7 on track for 2010

Windows 7 is "tracking very, very well" for a projected January 2010 launch, Windows unit head Bill Veghte has told financial analysts.

Few details have been revealed about the software, other than it will support a new multi-touch interface and feature major architectural changes.

DX 11 to boost parallelism via GPUs



Flying colours... Havok at work on a cape worn by a running man. See www.tinyurl.com/5v1hm4 for full sequence

DirectX 11, the next version of Microsoft's gaming technology, will facilitate the use of graphics-processing units (GPUs) to be used as general-purpose parallel processors.

New shader technology in DX 11 will facilitate GPUs to be used for more than just 3D graphics.

GPU-maker Nvidia, in particular, has been pushing the fact that its products can accelerate non-graphics tasks by cunning use of graphics routines.

DX 11, due to launch late this year, will also support multithreaded resource handling to optimise use of

multiprocessors. But it will require the Vista operating system and will not run under XP.

Microsoft has also signed a deal giving its Xbox 360 and Windows games developers easier access to Havok physics engines, used to model the form and behaviour of virtual objects.

Dragon breathes fire into dictation transcription

The latest release of market-leading voice-recognition software Dragon Naturally Speaking (DNS) can transcribe dictation three times faster than most people can type, says publisher Nuance.

Clever processing and voice-cancellation mics have also made recognition more robust in noisy conditions and correction has been made easier thanks to a new Quick Voice Formatting feature, according to Nuance dictation solutions director Simon Howard.

This allows you to format and edit in near-natural language, with commands such as Delete 'near-natural language'.

The simple command structure extends, in all but the entry-level standard edition, to searches on the web and large sites including Ebay and Amazon. The Professional edition allows you to call macros or VBA



modules by voice, allowing complex tasks involving several applications to be performed with a single command.

DNS 10 also allows voice control of the mouse, making the software more usable by disabled people.

The software is available in three editions: Standard, Preferred and Professional.

In brief

Eco-routers

D-Link has upgraded two Wifi routers to reduce their energy consumption by up to 40 per cent. The DIR-655 and Quad-band DIR-855 gigabit routers will be sold with the upgrade and existing owners will be able to download it.

The Green Ethernet technology detects connectivity status and cable length adjusts power accordingly. It also allows users to schedule when Wifi is active, though it can't be set to wake up automatically when an authorised client is within range.

An Ofcom report last month said that set-top boxes, TV screens, and routers left on standby waste the equivalent of the output of a 1,500MW power station.

Free access

Teamviewer is offering its eponymous flagship remote control product available free for private use. Rival Log Me In offers a similar deal and GotomyPC is available as a free trial.

Teamviewer looks good for providing instant support to friends or customers, provided they have a web link. They can download a client module that requires no installation and provides an ID and key; this can be phoned or emailed to you to give you full control of the machine. You can also set it up to allow you to access an unattended PC or Mac.

Web radio

The company behind the Radiopaq.com portal has launched a standalone internet radio designed to work with the site. The £250 Radiopaq Rp5 also acts as an ordinary FM receiver.



Email records set to go public

Councils, the Post Office, and a whole range of other public bodies will have access to your email and web records from next March, under plans unveiled by the Home Office.

Service providers will get £46m between them to store records for at least one year, though some already do so.

Details of the plan came in a consultation paper from the Home Office on the implementation of an EC security directive on

surveillance drawn up following the 7/7 London bombings.

But the remit has been extended from anti-terrorism to cover other crime, public health, and threats to public safety. Opposition MPs promptly labelled the plan a 'snooper's charter'.

The retained information will include the times you log on and log off and the times and destinations of text messages, calls and emails – but not their content or which websites you visited.

Bodies entitled to access the information include councils, health authorities, the Post Office, the Ministry of Defence, the Health and Safety Executive, and the Food Standards Agency. Each will have to appoint an authorising officer to approve requests for information.

The consultation document, elegantly entitled *Transposition of Directive 2006/27/EC*, is available at <http://tinyurl.com/5fyvvh>. Comments have to be submitted by the end of October.

Explore Nasa's space for online images

Nasa has made its huge collection of historic photographs, film and video available to the public for the first time in a partnership with the non-profit organisation Internet Archive.

A total of 21 Nasa image collections have been merged and put online at <http://nasaimages.org>. It is just the start of a five-year partnership that will add millions of images and thousands of hours of video and audio to the collection.

Nasa deputy administrator Shana Dale said it was "a new treasure trove for students, historians, enthusiasts and researchers" that would preserve historical content for future generations.



White clouds and deep blue Atlantic form the backdrop as astronaut Jerry L. Ross works on an experimental structure during a space shuttle orbit in 1985

Firefox brings back the command line

Mozilla is developing a Firefox add-on that the organisation says will combine the advantages of the command line and the graphical interface.

The Ubiquity project is designed to facilitate sharing of information over the web. For example, if you see a picture on a web page that you want to send to a friend, you right-click on it to get a text box into which you can type: 'Send to Joe Bloggs'.

Firefox will then open an email client, look up Joe's address and send the image.

Ubiquity, which uses Javascript, will come with a choice of instructions, known as 'verbs', but you will be able to add your own. The first version was expected to be fairly primitive.

Graphical interfaces such as Windows and the Mac OS were rightly hailed as an advance in usability. However, as anyone who

ever used a Unix or text interface will know, though less friendly than a graphic interface, they made some tasks easier and were more 'natural' to use. Speech-recognition programs use spoken commands that can simplify some operations – see page 17.

Ubiquity should be available on the Mozilla site by the time you read this.

See the Test Bed comment at <http://tinyurl.com/5ecfbt>.

The day Intel snubbed the CPU

This year marks the 40th anniversary of a project that eventually gave birth to the x86 processor dynasty that powers PCs.

Research catalogued by California's Computer History Museum (www.tinyurl.com/5f7mf6) shows that its roots lie in the work of a company called Computer Terminal Corporation (CTC), co-founded by Austin Roche who was interested in the idea of making a personal computer.

Industrial designer Jack Frassanito told the US magazine *Computerworld* how Roche drew a design for one on a tablecloth in a private club in 1968 (see www.tinyurl.com/672v6z).

CTC was ostensibly developing a teletype machine. But that was just to raise money for the real task, which was to put intelligence into the terminal so that it became a computer in its own right.



The 1970 Datapoint 2200, precursor of the PC. It could store 130KB on cassette tapes and had 8KB of memory

But Intel did agree to start work on a chip called the 1201 and, after a hiatus as CTC lost interest, finally produced one in 1971 which became the basis of the 8008, precursor of the 8088, the first PC chip.

But the CPU on the Datapoint 2200, which was essentially a desktop computer, used discrete components instead.

Frassanito said Roche, who had said CTC should own some of the intellectual property, was white-faced with shock when CTC management voted against using the 1201. "It was one of the worst business decisions in history," he told *Computerworld*.

Roche died in a car accident in 1975. CTC became Datapoint in 1972 and went bankrupt in 2000.

The first model, called the Datapoint 3300, tended to overheat, so CTC decided to pack all the components on its CPU board on to a single chip for its successor, the Datapoint 2200.

Roche asked Bob Noyce, then head of Intel, to make the chip and, according to Frassanito, Noyce said it would be "a dumb move" as you could sell only one per computer. At the time, Intel was making money from memory chips used in hundreds per machine.



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the multimedia community

World's first computer manual deciphered

More details have emerged about the 2100-year-old Antikythera Mechanism, described as the world's oldest computer, including the fact that it came with a manual.

The device was found in 1901 by sponge divers on the wreck of a Roman ship carrying Greek artefacts near the island of Antikythera. It contains some 30 bronze gears used to predict eclipses and other astronomical information, with the results displayed on spiral dials on the front and back.

They have been studied with the aid of a 3D scanner developed by Tring-based X-Tek. Writing on the mechanism, which describes how to use it, has been deciphered with the aid of HP



Hewlett-Packard Company and the Antikythera Mechanism Research Project

technology that superimposes images taken under different lighting conditions.

One of the dials has now been found to fix the dates of the Olympic games every four years. And the names of the months are similar to those used in Corinthian regions, including a colony in Sicily where Archimedes died around a century the mechanism was built.

Left: RTFM ancient Greek-style – part of the Antikythera instructions, including the words '76 years, 19 years'
Right: Part of the mechanism

Archimedes was famous for his inventions which, legend has it, included a way of setting ships on fire using mirrors.

You can download the paper describing the latest work at www.tinyurl.com/66yju8.

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LETTERS

→ Send your letters to The Editor, PCW, Incisive Media, 32-34 Broadwick Street, London, W1A 2HG Send your email to letters@pcw.co.uk

★
LETTER OF THE MONTH

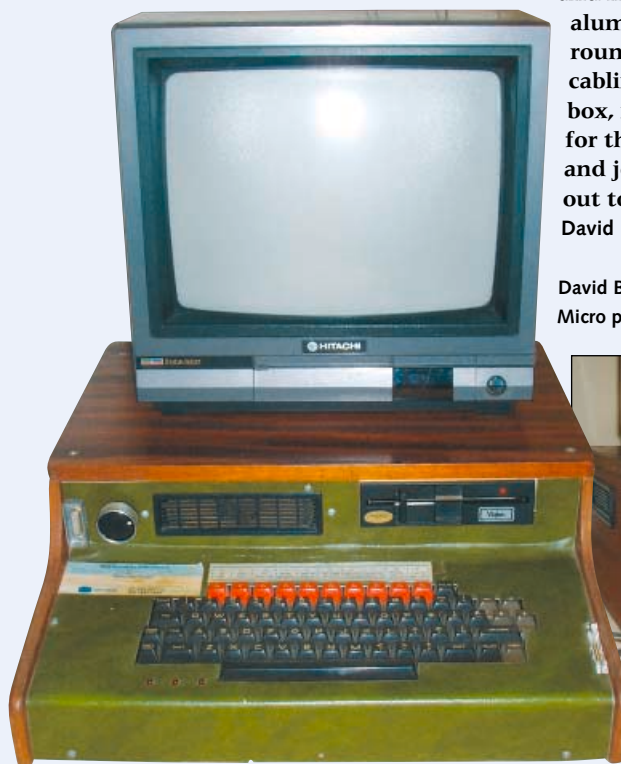
Wood you believe it?

Your photograph of the gold-plated BBC Micro (PCW June 2008, p19) reminded me of the 'wooden' version I made in the 1980s. You will see from the photograph it bears an uncanny resemblance to your model.

At the time, my son and I were attending a night class on BBC

computing at Norwich college and we had to take our Beeb with us. We soon got fed up with dismantling and re-assembling the monitor, floppy drive and all the cabling every week, so I hit on the idea of fitting it all in a wooden cabinet. The only modification I had to make was removing the top of the case and making a new cover out of aluminium, carefully fitting it round the keyboard. All the cabling was placed inside the box, including the mains sockets for the electrical items. Printer and joystick sockets were brought out to the front of the unit.
David Bunting

David Bunting's home-made wooden BBC Micro puts modern cases to shame...



...although the cabling could do with a bit of a tidy up

OS SPEED NEEDED

Working in IT support, I meet a great many IT users and the overwhelming majority of them have just one wish for their PC: they want it to go faster. A few years ago things were different; the requests were more about wishing Windows could do this or that, but since XP it has all been about speed and efficiency. Why then is Microsoft talking about touchscreen technology being integral to the forthcoming Windows 7? Has the company learned nothing from Vista?

Windows does what we need it to. Improvements should be focused on getting it leaner and faster, not bolting on ever more features that few will use. Is the Asus Eee PC not proof enough that lean is the way forward?

I don't buy a computer to play with the operating system, I buy it to run the programs I need on it. All an operating system should provide is a pleasant and easy-to-use interface to access those programs, while behind the scenes it gets on with the business of running the computer quietly and

without fuss. Surely by version 7 Microsoft should have found a way to do this, but I suppose if it did, how would it make people buy the next version?

I can't help but think that Microsoft is scraping the barrel with touchscreen; it's clearly essential for a handheld device but these, by their very nature, are at your fingertips. Desktops however, are very different; who wants to be leaning across their desk all day smearing fingerprints over a new touchscreen that they didn't want to buy in the first

place? Touchscreen technology may be useful for some, but surely it should be added on by those who need it, not forced onto everyone into the ever-bloating Windows.

As it reaches middle-age, it looks like Windows isn't just susceptible to viruses but to middle-age spread too.

Jake Dovey

IS PCW PRO-MAC...

Thank you so much for your informative article, Buy a Mac, Get a PC (PCW September 2008). As a software developer, developing cross-platform solutions, I have for many years developed on Windows and tested on Mac. Over the years I have invested a considerable sum of money in software for Windows, thus prohibiting a complete change to the Mac. My office has always been Windows-based with a lone Mac laptop for testing.

My main development PC was getting a bit long in the tooth and an upgrade was required. A few months ago, following a review of some powerful PCs in your magazine, I purchased a blazingly fast quad-core PC with Windows Vista 64-bit. For a few weeks I was delighted with my new purchase, as I gleefully installed lots of software and set all the preferences to make it work the way I wanted. Then it all started going wrong! In the end the vendor, Chillblast, agreed to take it back and offered a refund.

Then I saw your article about Apple Macs. I had never considered using a Mac as my main development machine, but the time was ripe for change and so off I trotted to the Apple store in Brent Cross. The staff were extremely helpful and, although knowledgeable about everything 'consumer', there were definite gaps in their knowledge when I started asking my more

technically complex questions. Nevertheless, a bit of research on the internet found the answers to all the questions that Apple staff couldn't answer.

There are a few minor niggles that I haven't yet got used to or found a solution to, but by and large, I'm delighted that your article convinced me to make the change at the time that it did. Not only can I get on with my work without worrying if my machine is going to restart at any moment, but my new 24in iMac looks beautiful on my desk and is the envy of all my staff and colleagues. Apple even had a £60 printer rebate offer at the time of my purchase, so I got a new wireless printer for free.

Hopefully you'll write more articles about the Mac now, so I won't have to question my subscription to a PC-biased PCW! **Chaim Bacon**

...OR ANTI-MAC?

I have never bought a copy of your magazine before and, having done so, I was astounded that it seems so anti-Mac. True,



Love it or loathe it, the iMac oozes style

Maplin's Portable Satellite Camping System is a cheap way to get Freesat



there are praises here and there, but always followed by a rebuttal – overpriced, slow, the 'i' in iMac stolen in 2000, rubbish keyboard, useless mouse, crashing gracefully!

On price you get what you pay for – ask any owner of a BMW! You can buy much cheaper Windows PCs and, provided you don't mind buying a new one every three years, then stick with them. As for the Mac's keyboard, I find mine very fast. The mouse could be better, mainly because my large hands tend to cover the central button and, as often as not, when in a hurry I find that I have fumbled up the Dashboard. And the criticism of them being slow surely depends upon which one you buy.

As for the 'i' in iMac being stolen in 2000, I seem to remember that in 1998 my first Mac was an iMac. You mention crashing too, what an alien concept. Since the introduction of OSX 10.2 and onwards, I don't think I have ever had a crash on my Macs; they used to crash in OS9, but that was years ago. True, there are sometimes situations where the spinning beach ball can hang, but it's only a three-fingered operation to force-quit the problem without affecting the rest of what is running.

I am so glad that I don't have to talk about A drives and C drives – we don't talk drives on a Mac at all. Finally, as for viruses

and trojans, I have never had one and I've used my Mac every day for more than 10 years.

Vernon J Yarker

CHEAP FREESAT

First let me thank you for an excellent magazine – I have been subscribing for more years than I care to remember. I read your article on getting satellite TV on your computer (PCW September 2007) with great enthusiasm and thought you might be interested in my experience.

I recently bought a caravan and wanted to watch TV while away. I have a laptop with Vista Ultimate, and purchased a Freeview USB tuner (£23 from Ebuyer). I use this to record programmes to watch later. Reception is mixed, usually poor due in part to the omnidirectional aerial fitted to most caravans. I considered upgrading the aerial to a directional type as featured in a caravan magazine but it was quite involved and expensive at £100-plus just for the aerial.

I then saw an advert on the internet for a portable satellite system from Maplin. The system was listed as Grade B (slight damage to case) with a full 12-month guarantee, price £49.99 including postage. This has everything required to hook up to a portable TV and the receiver has the bonus of working from 12V DC. For £8.50 I bought a capture card from Ebay that

CLARIFICATIONS & AMPLIFICATIONS

● In our review of **Ability Office (PCW October 2008)**, we stated that you cannot save documents in Word format by default.

Ability does have the option to default to the Word format. Our criticism was that it brings up the Save As dialogue box when you first perform a quick save (Ctrl & S) on a Word document.

We also mistakenly identified Office 2007 documents as ODF files when listing unsupported formats. We would like to clarify that Ability Office

cannot read Office 2007 (.docx) or Open Document (.odf) files.

● In our Home Network Masterclass (PCW August 2008) we should have noted that Local Security Policy doesn't feature in Vista Basic or Home Premium. To downgrade the NTLM version in these editions of Vista, edit the Registry as follows:

HKEY_LOCAL_MACHINE \SYSTEM\CurrentControl Set\Control\Lsa

The value "LmCompatibilityLevel" under this key should be a DWORD set to a value of 1.

enables me to watch Freesat on my computer and all for less than £60!

John Everitt

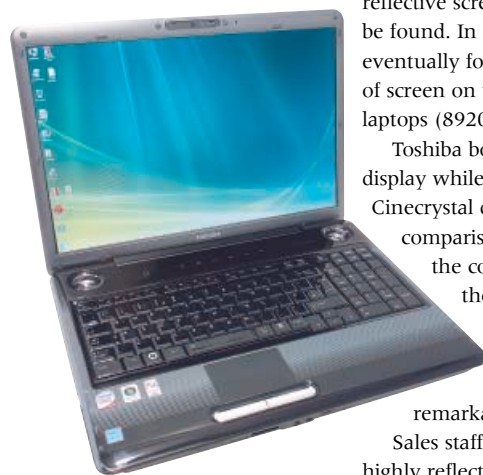
EASY CONVERTING

In your Convert VHS to DVD article (PCW October 2008) issue, I am surprised you ignore what seems to me the simplest and, for many people, the cheapest method: the hard drive/DVD recorder many of us already own.

I connected my old VHS recorder to my Sony hard drive/DVD recorder (RDR-HXD560) via Scart and was able to copy all our old home videos (using the original tapes in a carrier cassette) directly onto the hard drive. The machine also allows some editing, such as cutting out sections or splitting the whole video into smaller clips.

I could then make DVDs from these, naming each clip and putting them in order. The recorder offers a range of options for disc format and degree of compression. I could have recorded directly onto DVD if

Hard drive/DVD recorders can be used to convert VHS to DVD



The Toshiba Satellite Pro screen is highly reflective in daylight

I hadn't wanted to edit the recordings first, and quality is at least as good as the original.

I can also copy ordinary un-copy-protected VHS tapes in the same way. No doubt other makes and models of hard drive/DVD recorder would do much the same thing.

For further editing I have used free software on my Mac to extract editable files from the DVD, but in most cases the recorder's limited editing is all I need.

Bob Gray

MIRROR MADNESS

I recently bought a Toshiba Satellite Pro laptop and the machine fulfilled my spec requirements. However, the screen is highly reflective and the computer is almost unusable in normal lighting conditions, making it impossibly difficult to use in a room with very good daylight levels, which causes both eye strain and tiredness.

The Office 2007 ribbon menus are particularly washed out and the reflection is such that the screen doubles as a very useful mirror.

I have talked to Toshiba and tried all the settings available in Vista, to no avail.

After bringing this to the attention of the retailer, I was given permission to look around the store for a replacement laptop with a less reflective screen – none could be found. In another store I eventually found a different type of screen on two Acer Aspire laptops (8920G and 6920G).

Toshiba boasts the Truebrite display while the Acer has a Cinecrystal display. A useful comparison test is to switch the computers off and then compare the reflections on the screens. The difference is remarkable.

Sales staff tell me that the highly reflective screens are better for viewing films from DVD, but this is of little value to me.

Comments on viewing laptops in a range of lighting conditions would be useful in your reviews. Especially given that portable computers are supposed to be portable and be used in many different lighting conditions.

Cliff Hamer

ERRONEOUS CODE

The instructions in Tim Nott's Hands On (PCW October 2008, p145) were useful in that they showed how to create a desktop icon for safely removing hardware. It is a sensible alternative to the minute icon that appears on the taskbar. Regrettably, the line of code contained errors which caused it to fail.

This was not catastrophic, however it took some time to work out what your reader, Eric Harding, had intended. The errors should have been spotted and it is not helpful to print a single line of code wrapped to fit into a narrow column where spaces are critical.

Maybe you can find a better way of printing lines of code in future, for example by allowing them to cross several columns.

JG Steel

Kelvyn Taylor replies: Apologies for the missing space – the correct code is: `%windir%\system32\Rundll32.exe shell32.dll,Control_RunDLL Hotplug.dll`

(Key: \ code string continues)

WIN

Next month's prize for the letter of the month is a Scansnap S300 ADF scanner



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Gordon Laing



hardware@pcw.co.uk

Getting ready for Core i7

Excitement is building around Nehalem and the prospect of 64-bit operating systems on the desktop

It's official: after using the codename Nehalem for what seems like ages, Intel has announced its new microprocessor architecture will retain the existing Core brand, with the first products known as i7 (see news stories on pages 8 and 10).

Core i7 follows the chip giant's 'tick-tock' strategy of alternating silicon refinements and new platforms in alternate years. So, two years ago we had the debut of the Core architecture, followed 12 months later by a process-shrink from 65nm to 45nm, which means this year we get the new architecture and the excitement that surrounds it.

And there's certainly been a lot of excitement surrounding Core i7, which promises to deliver significant increases in performance. If you're in the market for a new high-speed PC, it's the way forward. But for me and other enthusiasts, the bigger question is how easily and affordably can we

re-use any existing DDR-3 (at these speeds) in a Core i7 system. As a result, an upgrade may 'only' involve a new processor and motherboard, which in the grand scheme of things isn't too bad.

I say 'may', though, because Core i7 has another key difference with current DDR-3 solutions: rather than having a dual-channel memory architecture, it boasts triple-channel access. That's great for memory bandwidth, but for best performance, you'll need to install Dimms in matched triplets (today's PCs use two or four Dimms in matched pairs).

While memory manufacturers will undoubtedly start selling Dimms in matched threes, I'm hoping a single Dimm with the same specifications as an existing pair should satisfy Core i7's demands. That said, judging by preview motherboards seen at Computex earlier this year, don't expect models with only three memory card slots; the most common configurations exhibited had four. Three of the four were the same colour, indicating which needed to be populated for triple-channel access, but I presume access to the fourth will be slower.

Much more interesting were the motherboards with six memory slots, allowing two sets of matched triplets. This presents the opportunity of 6GB systems using 1GB Dimms. Previously with traditional four-slot desktop motherboards, you'd need to buy pricey 2GB Dimms if you wanted more than 4GB of Ram. Hopefully owners of current PCs with two matched pairs of DDR-3 may buy a third matched pair to make the full complement of six.

While most Core i7 previews have concentrated on its faster memory bandwidth and quad cores with Hyperthreading (at least on the first models), I'm equally excited by affordable 6GB configurations or even 12GB. Increasing Ram continues to provide a highly effective boost in performance, but current hardware and 32-bit operating systems have seen most of us stall at a maximum of 4GB. I hope six-slot Core i7 motherboards become mainstream, allowing more users to enjoy the benefits of large memory configurations without spending a fortune on Dimms. Perhaps Core i7 will also be the catalyst that finally sees the widespread adoption of 64-bit operating systems on the desktop.

PS – Am I the only one who thinks Intel's code names sound better than the actual products? **PCW**

'Rather than force a new memory technology, Core i7 will talk to standard DDR-3 Ram'

upgrade existing systems? Some new processor architectures simply slot into existing – albeit fairly recent – motherboards, while others demand an upgrade of almost every system component. Indeed, if the required changes are too significant, it often makes more sense to either leave your existing PC as it is and simply buy a new one, or make a more modest upgrade using the older architecture. It's a decision every upgrader has to weigh up, and one I've discussed in this month's Hands On Hardware column on page 140.

Unlike the existing desktop Core architecture, which employs Socket 775 and some degree of backward-compatibility with earlier motherboards, Core i7 will require a new socket and, as such, a new motherboard; the first Core i7 processors will slot into sockets with 1,366 pins. A number of these additional pins are required by Core i7's new feature (albeit one AMD has offered for years): an integrated memory controller that talks directly to the Ram. Rather than force a new memory technology, though, Core i7 will talk to standard DDR-3 Ram, with the first versions using 1,066 and 1,333MHz Dimms. This is good news for owners of recent PCs, as they should hopefully be able to

Barry Fox



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Used and abused

Forcing companies to address the usability of their products would make life so much easier for the long-suffering buying public

There is a simple way to make things easier to use. Lock the company managers and their marketing and PR people in the departure lounge at Gatwick and only let them out when they have tamed what they are selling.

I am still tweaking the input and output assignments and settings for a nice Denon AV amplifier that I bought a year ago. What the manual needed was a few simple examples of average user setups, which other users can modify to suit individual needs.

A too-huge-to-lose remote control promised "Programmable power off timer". When I asked how to use this 'key feature' the company told me: "If you press the Standby button which is the power on/off button it disables the programming mode, then hit it again it will enable the programming mode."

'Nero says it is taking external advice on how to make its software more user-friendly'

At a demonstration of Pinnacle's latest Studio editing software some of us tried to point out an unnecessary obstacle for first-time users. The video 'capture' option only works with older tape camcorders. To capture from solid-state or hard disk camcorders, the user must find a much less obvious 'import' option. Pinnacle seemed genuinely surprised that this might confuse.

Has anyone at Symantec ever sat down with someone who has bought Norton 360 online and watched how they follow the instructions on making and testing a Recovery Boot CD? I'll bet most people never make a disc or only find out whether it works in an emergency.

Nero says it is now taking expensive external consultants' advice on how to make its software more user-friendly. Does it need a consultant to tell it that using Nero 8 to print disc labels also prints a CD booklet and inlay – until you discover the Elements option and uncheck some boxes.

Roxio Easy Creator comes with a new application called Back on Track Instant Restore (BOT). This does what Windows Restore often fails to do and what Norton Go Back used to do until Symantec introduced Norton 360 which

stops Go Back working. I quickly discovered that Roxio BOT stops the Windows chkdsk utility fixing hard disk errors. Oh, said Roxio, we need to change that. After six months the new version is still due soon. Did no-one at Roxio ever use chkdsk to fix a C: drive?

If you can find someone on AOL's helpline in India who knows their stuff they will tell you about the useful One Click Fixes tool. It can solve most common software problems. Couldn't other software companies provide one-click fix tools?

Most do provide a dedicated clean-up software tool that gets rid of residual clutter when installation fails. But the tool is usually buried in the vendor's website or available only from the helpline. Why not put it on the installation CD?

When researching a recent column on portable video formats, I asked Sony Ericsson two simple questions. What video file standards can SE mobiles handle and can any of them play the movie downloads now being offered by Paramount in competition with iTunes?

After months and many emails Sony Ericsson (SE) are "still waiting for clarification on Paramount" and could say only that SE mobiles play "MP4". When I reminded them that MP4 covers several incompatible flavours of MPEG4, SE first said "it is not something that we can speak about [and] feel it is better coming from a production company or similar – who actually make the movies/videos... We do not have experts on this subject in the UK office. If you were to speak to someone, it would need to be someone from the project teams in Sweden. We use MPEG4, but that is for the project teams to discuss. It is not a case that we won't comment, but we are not experts in the UK."

So let's get this straight. We are talking about the difference between video material playing and not playing, and a company the size of Sony Ericsson has no-one in the UK who understands enough about what they are selling to even know the difference?

For a while I thought this was the best ever explanation of why the buying public suffers so much pain. But that was before I started asking why some iPods won't work with some iPod docks. More next month. **PCW**

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Guy Kewney



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Learning to run in cycles

As a former ad man, Guy Kewney doubts Microsoft's ability to survive long-term in the cyclical world of advertising

If Microsoft really is ready to accept that it has no long-term future in selling software licences, it becomes important to understand what the alternatives are. And so it was that I was shown figures for just how many billions of dollars Microsoft makes from advertising. "That's the future," I was told.

What I have found about the world of computing is that it is a steady growth market, and has been since the 1950s. Especially personal computing, which has seen one or two odd years of slower growth, but which has spent the time since 1977 mostly getting bigger and more powerful.

Time for confessions again: I was, once, an advertising man. Worse still, I was a very bad one, and it took me some years to admit that I was congenitally unsuited for the life. But what I do

People do talk a credible smokescreen for all this, of course – market surveys, focus groups, reader and viewer response metrics, demographic analysis, and point-of-sale integration with above-the-line and below-the-line spend.

But the reality is that agencies 'get noticed' for doing weird creative TV clips. If you write copy for adverts, you won't walk into your next job interview with metrics showing how your client's sales rose after your campaign broke; you take a showreel of even more clever, weirder clips.

So when there's a downturn, the bulk of the advertising market behaves as if that metric stuff was just a masked ball; illusion is discarded for basic, gut responses. "Sales are down – spend more on adverts!" is the first. And when the budget is spent: "Move the advertising budget into PR, it's much more effective!" – and suddenly, magazines, TV, radio, and other media are forced to lay off staff.

The thing is, Microsoft has little or no experience of just how catastrophic these downturns can be. Since it started selling advertising, it has seen consistent expansion. In the mid-1990s, the concept of using software to sell toothbrushes and motorcars was not just weird, but impossible.

However, advertising people gradually started to expand their understanding of web commercials. Banners and skyscraper adverts that spelled out the client's name or product brand have gradually been replaced by more effective (and much more 'creative') viral Flash videos – growth, growth and more growth followed.

But that growth can't keep going indefinitely. And right now, all the business plans shown to venture capitalists on the basis of "We'll be advertising supported" are starting to be seen for the wishful thinking they are. A real recession is biting into marketing budgets, and those who depend on such spending for survival, are dying.

Can Microsoft survive in such a cyclical revenue stream? I suppose one answer would be: "It's better than having no revenue stream at all". But a more important question is: "Can Microsoft compete with Google in that business?"

I think the answer has to be No. Back to the thinktank, guys. **PCW**

'Microsoft has little or no experience of just how catastrophic these downturns can be'

remember about the advertising world is that it's very cyclical. But you could forgive Microsoft for thinking otherwise.

I think I was around when Microsoft first got seriously involved with advertising, because MSN asked me to write a regular weekly column for its UK pages. Not a column about advertising – it was about the UK high-tech business. The column lasted less than three months because although Microsoft said "Of course you can write critical articles about Microsoft", the company refused to publish the first examples I sent them.

Since then, Microsoft has seen its advertising revenues grow pretty much year by year. And the corporation seems to have got itself on to a path of steadily increasing revenues.

The trouble is, this path is entirely imaginary. In the real world, advertising is not an exact science. In the real world, advertising is produced by people who are primarily concerned with their own reputations among their fellow advertising folk, and it's more important to get a 'clever' or 'creative' commercial on mainstream TV than it is to create the right Google AdSense campaign.

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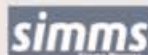
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Illustration: Tom Steyer

Make XP last longer

If you don't want to make the move to Vista, Robin Nixon and Nick Peers show you how to keep Windows XP in tip-top condition until the debut of Microsoft's next operating system

In May 2001, Microsoft started work on the next version of its Windows operating system. Working under the codename Longhorn, Vista was initially set for release in 2003 and was planned to be a stop-gap between XP and Microsoft's next-generation operating system, codenamed Blackcomb.

But as Longhorn gradually assimilated many of Blackcomb's intended features, the release date kept being pushed back. Then, in late 2004, Microsoft decided the codebase had become too unwieldy to manage, so it opted to start again and base it on the more reliable Windows Server 2003. By the time Longhorn was re-dubbed Vista in mid-2005

and the first beta was released, Microsoft had spent four years working on it – it also still had another year and a half of development to go.

With all that time taken in development, and industry estimates of more than \$10bn spent on it, everyone expected Vista to be even more popular than Windows XP.

Power hungry

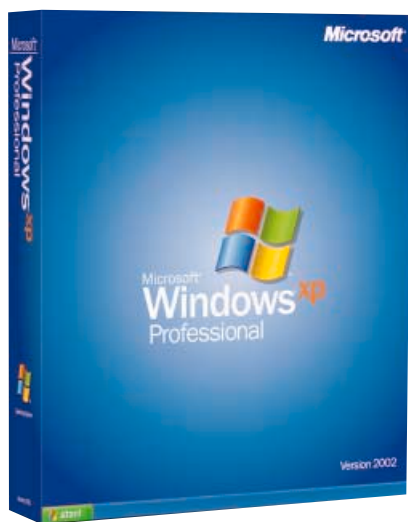
Disappointment set in early for Vista, when many users discovered how woefully inadequate their PCs were at running the operating system.

Microsoft said all you needed was an 800MHz processor, with 512MB of memory to run Vista (or a 1GHz processor with 1GB of memory to be Premium Ready).

In reality, it turned out that unless you turned off all the fancy stuff – such as the Aero interface – you really needed at least a 1.3GHz processor and a minimum of 2GB of Ram. What's more, although Vista had been in beta testing for 18 months, there weren't nearly enough hardware drivers ready on its release, and many printers and other add-ons failed to work with it.

Bearing this in mind, many users have opted to only purchase Vista when it's installed on a new computer that has the

Launched in 2001 and officially retired this year, it's possible to make Windows XP last until past its 10th birthday in 2011



To avoid this situation, you should visit www.driverpacks.net/DriverPacks.

Driverpacks is an open-source project that aims to provide a local copy of all the drivers XP will need. On the site you'll see listed a number of downloads under the headings Chipset, CPU, Graphics, Lan, Mass Storage, Sound and Wlan. You'll need to download all the files into an empty

directory on your hard disk. The total download size should be about 336MB and all the files will end with the extension .7z. They can be decompressed using the 7-zip program (available at www.7-zip.org).

Once you've downloaded and decompressed all 10 packs, you should move the compressed files you downloaded out of

these drivers into a specially customised XP installation disc.

You can also find Windows drivers at the Microsoft Update Catalog site at <http://catalog.update.microsoft.com/v7/site>, but it's tedious if you need more than a handful.

Keep all master discs

As well as collecting drivers from the internet, it's important to keep every original installation CD (or ISO images of them) for all your software and hardware. Whether drivers for a wireless adapter, an MP3 player or a webcam, the day will likely come when you'll need to restore a corrupted driver or re-install software relating to the product. Of course, drivers may be available on the web, but what if you need to re-install your wireless networking card, or if the driver you need never made it to the master disc of drivers you created?

As always, it's better to be safe than sorry, so keep all your discs somewhere safe. We also suggest you get a good-quality, fine-tip CD marker pen and write the product key for every disc you have on the disc itself. This will solve all manner of headaches should a CD be separated from its original case. You may even want to write these keys on stickers to attach to the back of your PC.

Don't forget to also back up copies of the installation files of any programs you've bought and downloaded. It's a good idea to keep all these on their own separate discs and, again, make sure you have written the product keys on them.

In particular, if your PC didn't come with a Windows XP master disc, it should have a program on it that can create a set of system restore discs. If so, make sure you do this.

As a final precaution, if you've lost your original Windows product key, download and run Keyfinder from www.magicaljellybean.com. This will scan your system and notify you of all your Microsoft Office and Windows product keys, plus other supported programs.

'Many users have opted to only purchase Vista when it's installed on a computer that has the power to run it'

power required to run it properly. This leaves millions of computers out there running XP very nicely, and whose owners are wary of upgrading it when there's no apparent need to do so.

If you're one of these people, you may be more interested in waiting for Windows 7, which promises to be a much leaner and faster rewrite of the Vista operating system and is due to arrive in 2010. So what can you do in the meantime?

Well, much like keeping an older car on the road, you must ensure you have all the parts required for repairing your XP installation, as well as the tools to keep it tuned and the drivers needed to operate any hardware connected to it.

Here, we'll detail everything you can do to keep your Windows XP PC running reliably until you either upgrade to Windows 7 or decide it's time buy a new PC.

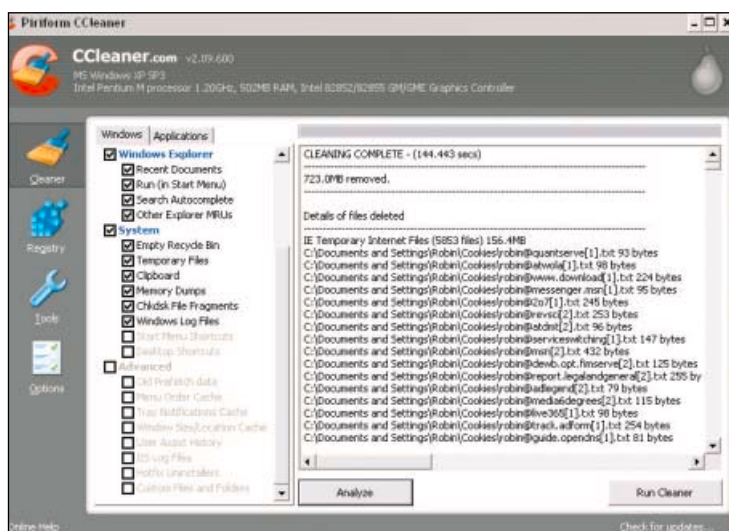
Driver backups

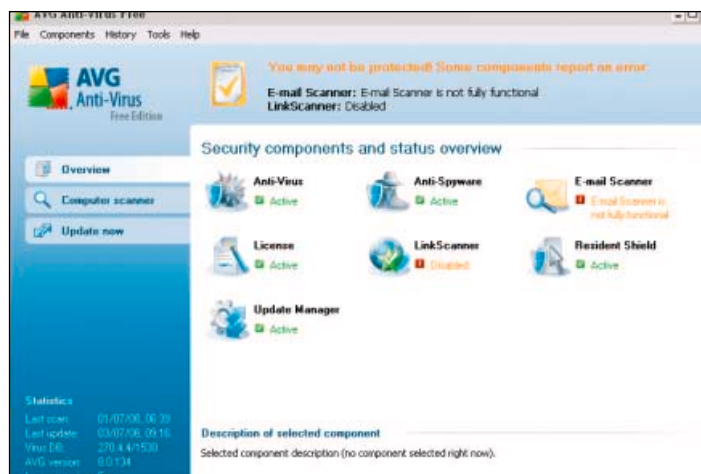
You never know when disaster may strike, resulting in you having to re-install some or all of your Windows setup. This can leave you without drivers for crucial components, and there's a good chance you won't be able to connect to the internet to download them.

the directory to a safe location. You can then copy the remaining extracted directories and their contents to a 2GB or larger memory key, or burn them to a DVD.

You can use these drivers whenever you have to re-install or repair a Windows XP installation, so it's worth keeping sufficient backup copies of these driver discs to cover you in all eventualities. What's more, on page 34 we'll show you how to incorporate

CCleaner is a powerful utility that will remove a range of unwanted items from your PC





AVG Anti-virus
Free Edition protects
your PC from a
wide range of
online threats

The future of XP

Bill Veghte, Microsoft's senior vice-president, has written a roadmap on the future of Windows, where he explains which versions of the operating system will be phased out and when, as well as what kind of support customers can expect for legacy operating systems.

The basic facts are that Microsoft stopped selling Windows XP worldwide as a retail product in July this year. It also stopped licensing XP to PC manufacturers, but in response to public pressure, the operating system can be purchased with a new PC until 31 January 2009, although only as a downgrade and only from a limited number of suppliers.

This means that to obtain your copy of Windows XP, you'll need to pay for an installation of Vista Business or Ultimate on a new PC with a supplier that is prepared to allow you to downgrade to Windows XP Professional. There's no downgrade path from Vista Home Basic or Home Premium editions, and in no circumstances will a downgrade to XP Home be offered. So, although it will be possible to get hold of these 'downgrades', we think finding an accommodating supplier that provides this service at an affordable price won't be particularly easy.

However, another way you can get your hands on a copy of Windows XP for a couple more years is to opt for the Windows XP Home and XP Starter editions, which Microsoft will sell until 30 June 2010, although they'll only be available on low-end budget systems.

Customers will, however, continue to receive mainstream support for Windows XP until April 2009, as well as be able to receive help from Microsoft under its extended support policy until April 2014. In addition, Microsoft will continue to provide security and other critical updates for Windows XP until April 2014.

Microsoft plans to deliver the next version of Windows, currently known as Windows 7, by approximately January 2010, although going by the delays Vista suffered, we won't be holding our breath.

You can read Veghte's full open letter, entitled 'An Update on the Windows Roadmap', at www.microsoft.com/windows/letter.html.

External drives, such as the Maxtor Onetouch, can make backups quickly and easily



hard disk to an external drive. Most external drives come with backup software, making it easy to safeguard your files automatically, and then restore the data quickly if needed.

You could also consider a bit of manual backing up of, for example, your documents folder to a USB memory key.

Being so cheap these

Make a note of these. You may wish to use stickers affixed to the back of your PC.

Remove the bloat

You've probably installed a number games or other programs you no longer use, which are probably hogging useful disk space if nothing else. A quick way to get rid of them is to select Control Panel, then Add or Remove Programs. Now uninstall everything you are certain you don't use. Be careful, though, as there may be some entries you don't recognise. The key here is, if in doubt, leave it where it is, but you may be amazed at the amount of stuff you can clear out.

Having done this, there are likely to be a lot of outdated and unused entries remaining in your Registry. To remove the unnecessary ones, you can use a utility such as CCleaner (available at www.ccleaner.com). Not only will CCleaner slim down your Registry, but it can also remove temporary internet files, cookies, log files, CHKDSK file fragments and more.

While you're at it, it's worth heading to Accessories, then System Tools, and running the Disk Cleanup and Disk Defragmenter programs in that order.

Taking all these steps will help to ensure your XP installation starts off as optimised as possible before taking on the task of managing all your computing requirements over the next few years.

As well as backing up your important documents to CD or DVD regularly, you should get into the habit of backing up your

days (4GB models can be picked up for less than £15), you could keep two of these devices for this purpose.

You can also email yourself copies of important documents (as long as they are less than 20MB) via Google Mail. Then, using Gmail's built-in labels, you can keep them out of the way of your inbox. As an added bonus, you can download these attachments on any web-connected device whenever you need them. Another alternative is to make use of one of the many free online backup services.

All systems restored

You would also be well advised to set yourself regular system restore points. Most programs will create one for you when they're installed, but if you want the ability to restore your PC back to certain configurations of your choosing, you should create your own – a good point to set is right after you have optimised everything. To create a restore point, select Accessories, System Tools and choose System Restore.

Safe from attack

One of the worst things that could happen to your XP installation over the next couple of years would be a virus or spyware infestation. In the most serious cases, the only way to disinfect your PC is to perform a total operating system re-install, which is not an enjoyable experience. To avoid this scenario, you should arm yourself with a few protective utilities.

EXTEND XP'S LIFE

One popular and free choice that's easy on system resources is AVG Antivirus Free Edition (www.pcw.co.uk/downloads). Once downloaded and installed, AVG will sit in the background monitoring your PC for dangers, including viruses, spyware, phishing websites and emails containing suspicious attachments.

If you already have adequate virus protection, it's still worth bolstering your defences by installing some spyware protection. Spybot Search and Destroy (www.safer-networking.org) is another free tool that, thanks to regular updates, will keep your PC safe. Alternatively, you can purchase one of the many commercial internet security suites available, which provide anti-virus, anti-spyware, firewall protection and more, all in a single package.

Hard disk care

It's not uncommon for a hard disk, in particular old ones, to fail. Usually, though, the operating system can recover from these

errors and retrieve most, if not all, the lost data and mark the bad sectors as unusable. But if you have too many bad sectors, your hard disk starts to become unresponsive and is at risk of failing altogether. It's therefore important to keep your disk maintained by checking it for errors regularly. You can do this by clicking Start, then Run and typing CHKDSK. If errors are encountered, you'll need to re-run the program using the /F parameter to allow it to attempt to fix them.

You can also minimise wear and tear on your hard disk by relocating the system's swap drive to an external hard disk or USB memory key. You may even find that you speed up your PC if the new disk is faster than your current system's.

To do this select System Properties, Advanced and click on Settings. Then select Advanced and, in the Virtual Memory section, click on Change. You can then choose which drive will hold the virtual memory and click on Set followed by OK.

It's recommended you keep the 'System managed size' option checked unless you know what you're doing.

Re-installing XP

If you decide a complete re-install of XP is required, by following our tips you will be well prepared. With any luck, you'll have your original Windows XP master disc, allowing you to re-install directly from that. Alternatively, you should have the set of restore discs we advised you to create earlier in this article. Failing that, you'll need to borrow an XP installation CD.

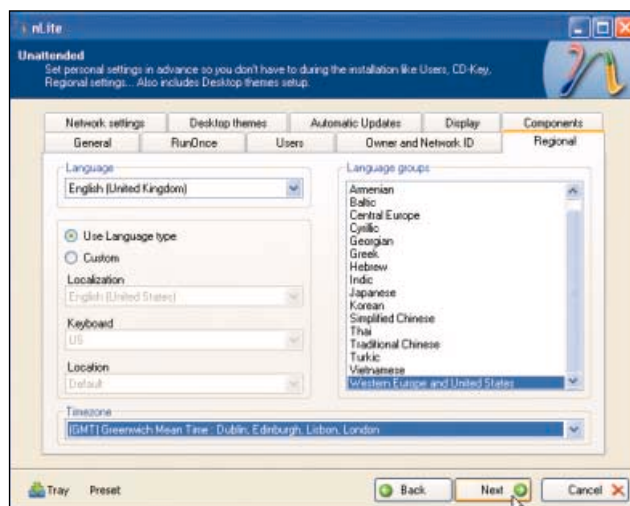
However, you should address this now while you remember, and things will be made much easier if you first create a slipstreamed XP installation disc that incorporates all the Windows service packs and drivers for your hardware. The next section will give you full instructions on how to do this.

SLIPSTREAMED XP

We're now going to show you how to create a customised Windows XP install disc that includes the latest Service Pack 3 (SP3), so it's fully up to date and includes drivers for your main components, peripherals and, if you want them, Internet Explorer 7 and Windows Media Player 11. This is a process called slipstreaming, and re-installing XP from a slipstreamed disc saves time and hassle in equal measure. Here's how to do it.

What you'll need

This procedure requires an original Windows XP installation disc, so if your PC came with a recovery disc or recovery partition on the hard disk, then you're out of luck unless the



Nlite is a free way to create your own customised XP installation disc

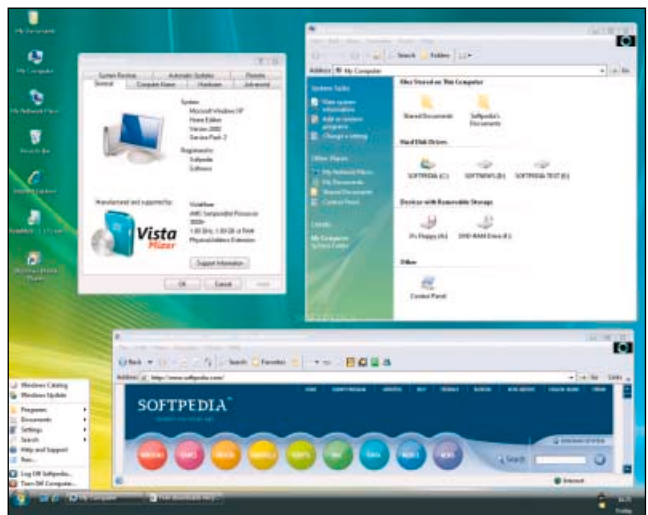
Emulate Vista on Windows XP

If you like the look and feel of Windows Vista, then why not emulate it on your XP computer? There are many ways you can achieve this, one of which is to use a program such as Window Blinds, which allows non-Microsoft theme files to be installed, although these usually cost money for the full versions.

There is, however, a powerful free utility called Vistamizer (www.pcw.co.uk/2190821), which transforms your Windows XP, Media Center Edition or Server 2003 installation into a dead ringer for Vista – and all from a single executable file. All you have to do is follow the simple prompts.

To achieve this close emulation, Vistamizer alters several of your system files. But before it does so, it creates a system restore point so that if you notice any problems you can get your PC back to exactly how it was before. In addition, a full uninstall program is also supplied.

It's possible to make Windows XP emulate the look and feel of Vista using Vistamizer, a powerful free utility



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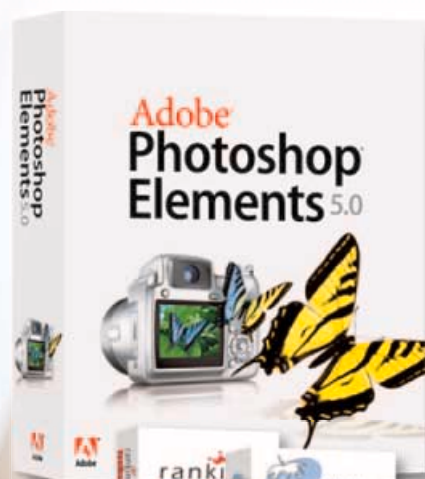
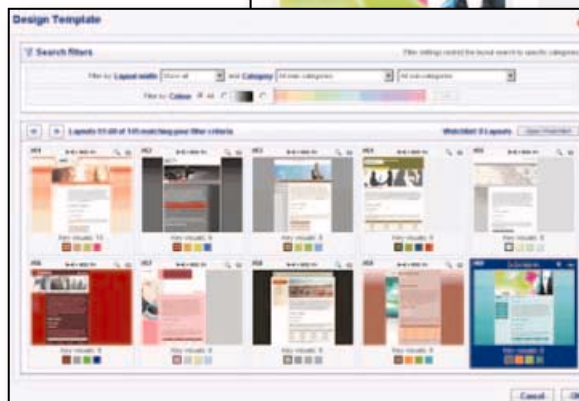
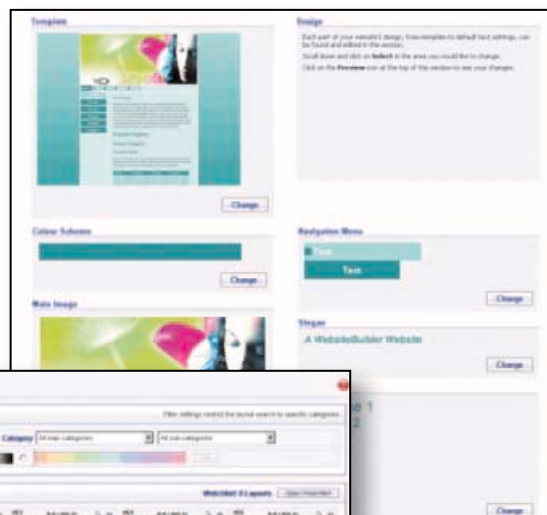
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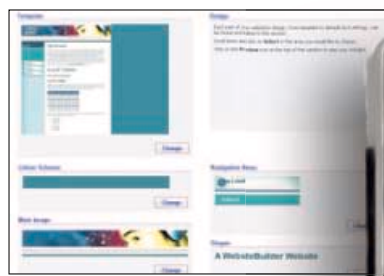
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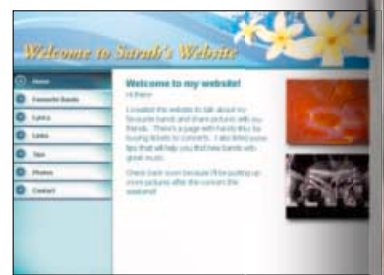
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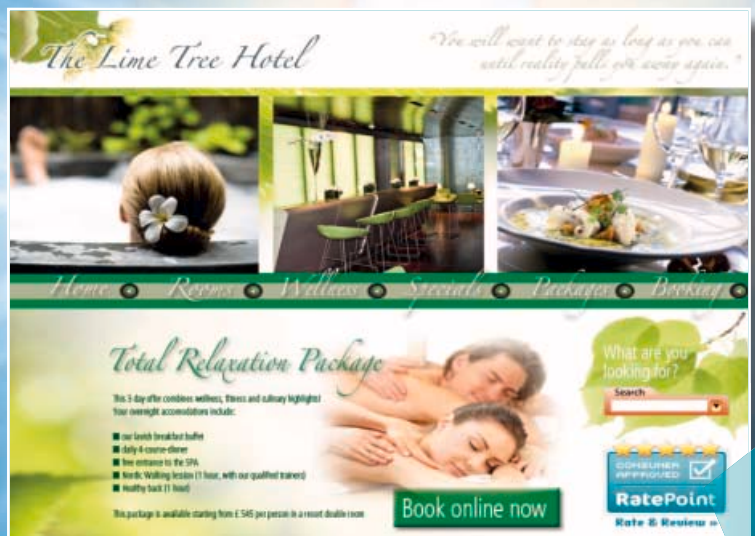
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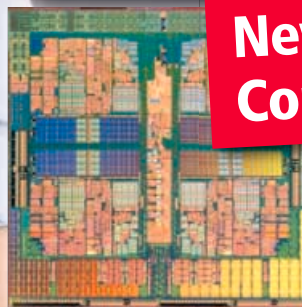
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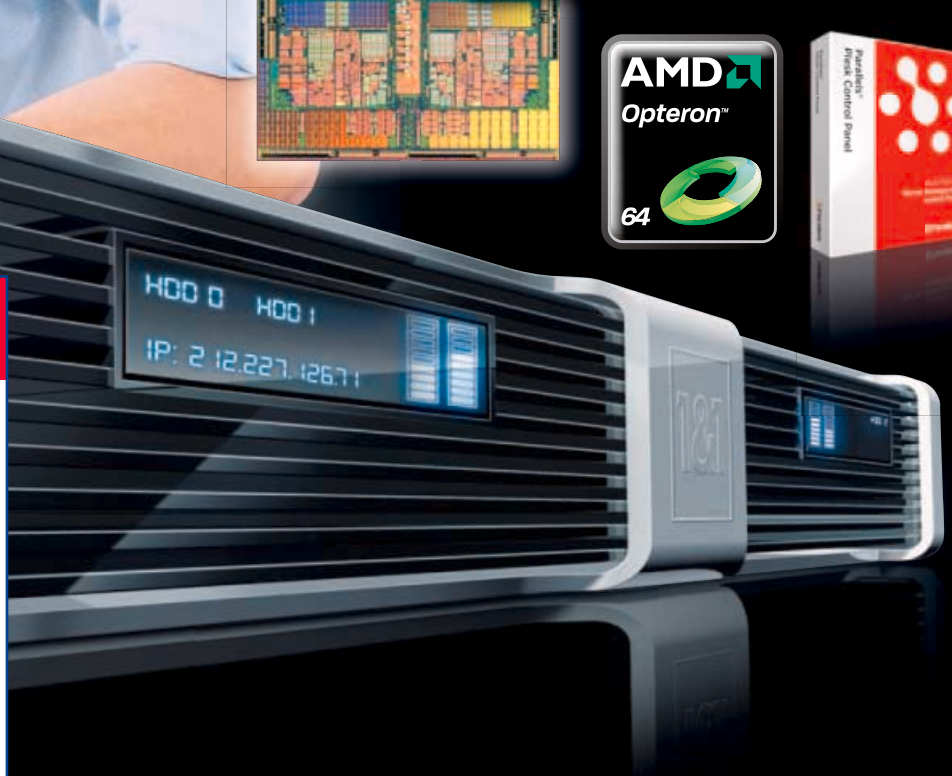
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recovery disc was an installation disc 'in disguise'. To check this, look at the directory structure. If there's a directory called /i386 (it may be in a sub-directory, so have a good look around, as it may be in a directory called something like /Source), the chances are that it's a proper XP install disc and you can use it for slipstreaming. Otherwise, there may be a utility with your PC to create the install disc.

You'll also need a copy of the full Windows XP Service Pack 3 file – all 316MB of it – which can be downloaded from <http://download.microsoft.com>.

We'll be using a free program called Nlite, which integrates everything and creates the final disc. Get it from the PCW Downloads site, (www.pcw.co.uk/2157730), or www.nliteos.com/download.html.

Nlite allows the integration of a wide range of other programs (mostly freeware or open source) on to an XP installation disc, so they're installed alongside Windows automatically. To add Internet Explorer 7 (IE7) and Windows Media Player 11 (WMP11), visit www.winaddons.com/nlite-addons. Click each link in turn from the alphabetical list, then choose one of the download links to save each CAB file to your hard disk.

XP was released in 2001, which means the drivers included on the original installation disc aren't just few and far between, but also woefully out of date. If you're willing to add hundreds of megabytes to the size of your installation disc, which will probably necessitate saving to a DVD rather than a CD, then, as explained previously, visit www.driverpacks.net/DriverPacks to add your choice of graphics, sound, motherboard chipset, mass storage (for newer serial ATA and Raid hard disks) and network (both wired and wireless) drivers to your installation disc.

Again, these will be installed automatically during the Windows setup process. It'll slow things down a little, but will still work out quicker than installing them all separately afterwards.

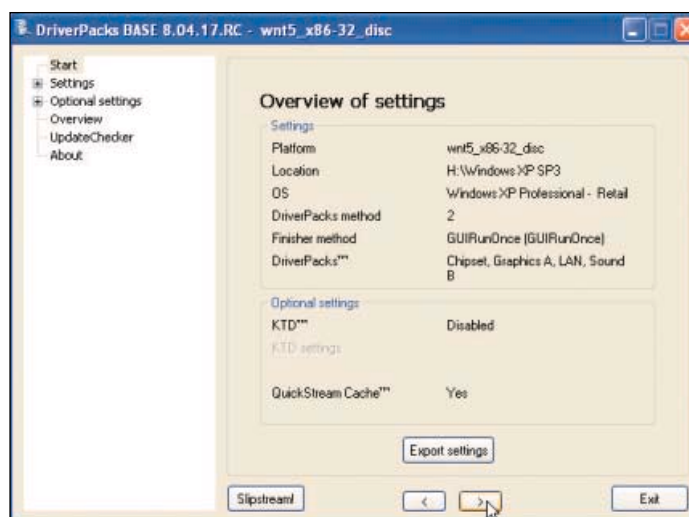
The drivers are integrated independently of Nlite, so you'll need the Driverpacks Base file to do the dirty work for you. Click the link and make sure the file version is at least 8.04 before downloading as this will ensure it works with Windows XP Service Pack 3.

Once the Driverpacks Base has been downloaded, you can pick and choose which other Driverpacks you want. Click an entry to see which devices are supported by that download. There are two or three choices for soundcards and graphics adapters, so be sure to pick the ones that match your PC.

Create your customised disc

Once everything is downloaded – and we recommend putting them all in the same

Driverbase is a great way to incorporate lots of drivers into your slipstreamed disc



folder for ease of access – start by installing Nlite. If you don't have the Microsoft .Net Framework 2.0 installed, it will prompt you to install it. Leave the default options as they are. After clicking Finish, the program will automatically launch.

After clicking Next at the welcome screen, you'll be prompted to locate your existing installation files. If you're using an XP disc, pop it into the drive, exit any welcome screen that may pop up, then click Browse to select your CD or DVD drive. Otherwise, browse to the directory where your XP installation files are stored.

'It's not uncommon for a hard disk, particularly an old one, to fail'

Nlite will prompt you to select or create a folder to save the modified files to: click OK, choose a folder on the hard disk and click OK again. Make sure the selected disk has enough free space available. If you're not integrating drivers, then 1GB should be ample; double this amount if you are.

Wait while the files are copied from the XP disc to the hard disk. Once complete, the existing installation (Windows XP, XP SP1 or XP SP2) will be identified. Click Next twice to arrive at the main menu screen, which is where you select the parts of Nlite you want.

For the purposes of this feature, we'll not only be integrating files into the disc, but also setting up some options and tweaks to speed things up further. Click the following items to select them: Service Pack, Hotfixes, Add-ons and Update Packs, Unattended and Tweaks, before clicking Next.

Unlike other portions of the program, slipstreaming SP3 into the installation files is done instantly. Click Select to browse and select the SP3 file.

The slipstreaming process will begin, files will be extracted and, when complete, you'll be told 'Integrated install has completed successfully'. Click OK, wait and you should see the installation now referred to as SP3 (5.1.2600.5512). Click Next.

Integrating Internet Explorer 7 and WMP11 is simple using the next screen. Click Insert to select the CAB files downloaded earlier. If both are in the same folder, hold the Ctrl key while clicking each in turn to select both, or select them individually. Once both appear in the list, click Next.

Save time during setup

The Unattended portion of Nlite allows you to specify setup requirements such as regional information and the product key, so they're skipped during installation, speeding things up further. This portion is split into 10 tabs, but not all are required. We'll guide you through the options that are relevant to creating an unattended setup.

Start at the General tab. Make sure 'Hide pages' is ticked under Unattended Mode to ensure you're not prompted during setup for any information entered now. If you enter the XP product key, it will save you having to do so again later. If you no longer have the original XP disc wallet that contains your product key, it's here that the Keyfinder tip we mentioned earlier will come in handy.

Once you've located your product key (either via Keyfinder or the XP disc wallet), enter it, then switch to the Users tab to set up any other user accounts. Create at least one account (your own), password protect it if necessary, and if you're the only user of your PC, select it from the Autologon section to bypass the welcome screen each time you start Windows.

The Owner and Network ID tab allows you to set up the computer name, workgroup and personal details. Now switch to the Regional tab to choose English (UK),

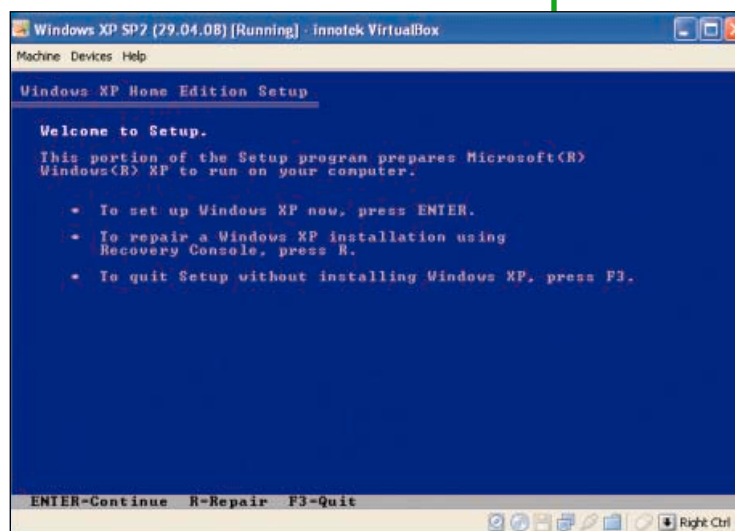
Test out your slipstreamed CD

Once you've created your personalised slipstreamed CD with Nlite, it's worth testing it out to check that it works correctly and that you haven't messed up the Windows CD key, for example.

The easiest way to do this is by running the installation procedure on a virtual PC, using free programs such as Sun's Virtualbox (www.virtualbox.org) or Microsoft's Virtual PC 2007 (www.microsoft.com/windows/products/winfamily/virtualpc/default.msp).

Create a virtual PC in either of these programs, giving it at least 256MB of Ram and a 5GB virtual hard disk. Then boot the virtual PC from your slipstreamed CD (both programs allow you to 'capture' your physical CD/DVD drive for use by the virtual PC) and follow the XP setup

Use a virtual PC to test out your slipstreamed XP disc



routine to see that all's well. Don't activate the copy of XP, though, as this could invalidate your main PC's licence. XP SP3 allows you a 30-day grace period before activation is required, which is more than enough to allow you to test your slipstreamed installation.

drivers at the beginning of the Windows installation process.

That's nearly it – leave Method 2 and GUIRunOnce selected on the next two screens, and then follow the number of optional screens; two might be of interest.

The KTD screen enables you to copy the drivers to the hard disk after the Windows setup process completes, in case you add or change hardware at a later date. There's also a screen for ATI

graphics card owners to choose a version of the ATI Catalyst software to install alongside the driver.

When done, click the Slipstream button to add the drivers to the installation disc. Once complete, click OK to finish. You're ready to create a disc or an ISO file.

In the slipstream

Now create the final slipstreamed installation disc. Launch Nlite and click Next until the menu screen appears. Make sure only Bootable ISO is

selected, then click Next.

To burn directly to disc, select Direct Burn from the Mode dropdown menu. Insert a blank recordable CD, tick Verify, then click on Burn. If you want to test the disc using Virtualbox (see box above), create an ISO image instead: make sure there's enough space on the hard disk, choose Create image from the Mode dropdown menu and click Create ISO. Choose where to save the file, name it ('winlite.iso' is the default) and click Save. The ISO file will now be created.

Once burned, the disc is ready for use. When you next want to re-install Windows, just boot from this CD and you'll find the process is similar to the normal Windows installation process. Some parts may be slower, but not having to enter information such as the product key and network details will compensate.

The biggest bonus? When the install process finishes, Service Pack 3, Internet Explorer 7, Windows Media Player 11 and all the key drivers will be installed and set up, ready for you to use all those master program discs you tucked away to replace your other software.

All this will give you a fresh installation of Windows XP that should put a spring back in your PC's step. XP might be on its last legs as far as Microsoft is concerned, but if you follow our tips, there's no reason it can't see you right through to Windows 7 – and perhaps even beyond. **PCW**

select the relevant time zone, and Western European and the US from the Language groups. The other tabs can be ignored as they have no bearing on the screens that appear during setup. Click Next when done.

The Tweaks section is one for experienced users only. If you don't understand what's going on, click Next without doing anything; if you do, you'll find some useful tweaks and shortcuts to speed up the way you use Windows afterwards. Select a tweak to read more about it, then tick the box to

'When the install process finishes, Service Pack 3, IE7 will be ready for use'

have it set up automatically during the installation process. Click Next and you'll be asked if you want to apply the changes. Click Yes if you're happy and the integration process will begin. This shouldn't take too long unless lots of add-ins have been incorporated. Once complete, the total size of the disc will be displayed. Click Next and Finish to exit Nlite.

Integrate your drivers

Adding drivers to the slipstreamed disc is done separately using the Driverpacks Base

program. Start by double-clicking the downloaded Driverpacks Base file to open a dialogue box. By default, this will extract the program files to the same directory as the installer, so click Extract if you're happy with this, or click the '...' button to choose a new location.

Once extracted, five folders will appear along with some files. Move the other Driverpacks files you've downloaded into the Driverpacks folder (not to be confused with the '3rd party Driverpacks' folder). Double-click the DPs_BASE file to begin.

A series of screens will appear. Use the '<' and '>' buttons to move between them. Start by selecting the required language from the dropdown menu before clicking '>' twice. Leave 'disc' selected under 'Installation platform' and click Browse. Choose the installation files folder created earlier in Nlite and click OK. Review the choice – if it's correct, you should see Windows XP Home (or Professional) SP3 appear under Location at the top of the screen.

Use the next screen to select which Driverpacks to slipstream into the installation disc. Only those copied into the Driverpacks folder should be visible – tick those you wish to include (or click Select All).

If you select Mass Storage, the 'Driverpack Mass Storage text mode' option becomes available. Only tick this option if you have to provide a floppy disk with

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Choosing a home network server

There are many things to consider when adding a server to a network. Alan Stevens explains



Home networks tend to start out small, with most of us content to use the connectivity a Lan provides to share internet access and perhaps the odd file or two between PCs. However, there can come a time when that's not enough, at

which point you'll probably have to think about adding a file server. But is that a wise move? What exactly has a file server got to offer; what's involved in setting one up; how much will it cost; and is it worth the hassle?

In this introductory feature, we'll explain how moving to a server-based system can

bring great benefits to your home computing environment. We'll look at the various options available in terms of both hardware and software, and offer some real examples that can put everything in context.

If you're new to networking, you might find some of our previous Hands On features

of use – you can find these at www.pcw.co.uk/tags/networks. You might also like to refer to our 2007 feature on the basics of home networking, which you can read for free online at www.pcw.co.uk/2200556.

What a server does

A server is a general-purpose computer that can be used for a variety of tasks, but on a home network one of the most common is file sharing. “That’s no big deal,” we hear you cry. “I can do that already using the peer-to-peer sharing built into Windows.” True enough, and in essence it’s the same technology, but there are differences when a server is involved.

To start with, a server is a single common resource, so you don’t have to remember which PC holds which files – they’re all located in one place. A server will also usually be available all the time and not switched off like a desktop or, worse still,

carried around like a notebook. Backup becomes easier to handle, again because all your data is located in one place, as does security with far less management involved when it comes to controlling who can see and do what, screening for viruses and spam and so on.

File sharing isn’t the only thing you can do with a server; it also provides a convenient platform for a variety of useful shared applications able to take advantage of its always-on status. One example is using web server to host a family website or an SQL database, now a common prerequisite for a variety of applications – from home accounting to contact management. You might also use your server to run media-streaming software to deliver music and videos out to network players around

the house, or host an email server to pick up your family’s mail.

But don’t get carried away. File sharing is all that most home users look for, possibly with facilities to back up client PCs to the shared storage. Some may find it useful to add a local web server later on and perhaps try out media streaming, but don’t assume you’ll need to buy more servers – one system should be enough to handle all these and other tasks, assuming, of course, it’s configured properly.

Desktop or server?

So, you’re still interested in getting a server, in which case the next question you’re likely to ask is, “Can I use an old PC?” The answer is, “Yes you can”, although there may be reasons that’s not a good idea. We’ll discuss

this in greater detail later in this feature.

In many respects, a server isn’t very different from a desktop PC. It has much the same kind of processor, supported by similar memory and disk storage. A server also runs an operating system, often a variant of Windows which, in turn, can host

applications. As such, it’s entirely feasible to re-purpose an old desktop PC, or even a notebook, for use as a server on a home

If you’re going to use an XP PC as a server, you’ll need to disable simple file sharing and make other changes too

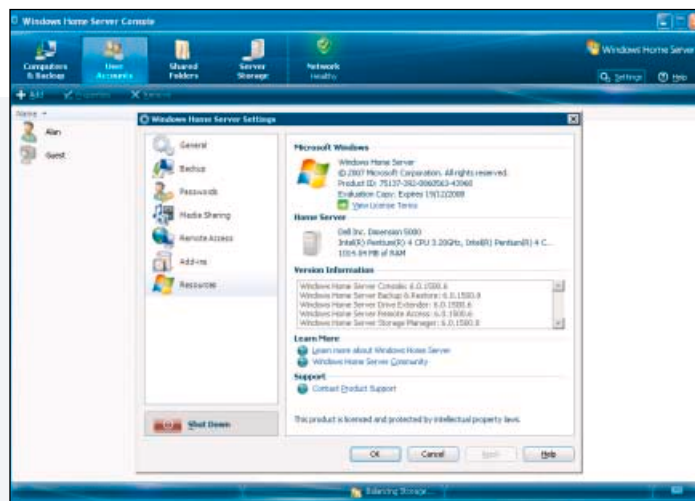
Windows Home Server

A ready-made Windows Home Server (see our group test in the July 2008 issue) is easy to deploy, but the DIY approach is also worth considering as the PC involved doesn’t have to be highly specified and you can easily re-purpose an old PC. We opted for a Dell Dimension 5000 with 3.2GHz Pentium 4, but equivalent AMD-based hardware can also be used. You’ll need at least 512MB of memory (ours had 1GB) and a 70GB hard disk or bigger (serial ATA is best here, but parallel ATA is fine), with other advantages if you provide two or more disks. USB2 support is needed if you want to connect external disk drives. A DVD drive is another prerequisite plus, of course, a network interface.

A keyboard, mouse, graphics card and monitor are needed for installation, but these can be discarded later and the home server managed remotely.

We installed the software in about 20 minutes. It’s not difficult and is well within the scope of anyone used to installing desktop versions of Windows. The only thing to watch out for, especially on an older PC, is the need to find and install compatible drivers for any network, storage and other interfaces that aren’t configured automatically during the setup process.

Once the server has been installed you also need to install the Home Server Connector onto the client PC (XP and Vista 32-bit and 64-bit versions are both supported in the latest Powerpack service pack for Windows Home Server (WHS), available from Microsoft at <http://tinyurl.com/65azu5>), either from the CD provided or from a network share on the newly installed server. Either

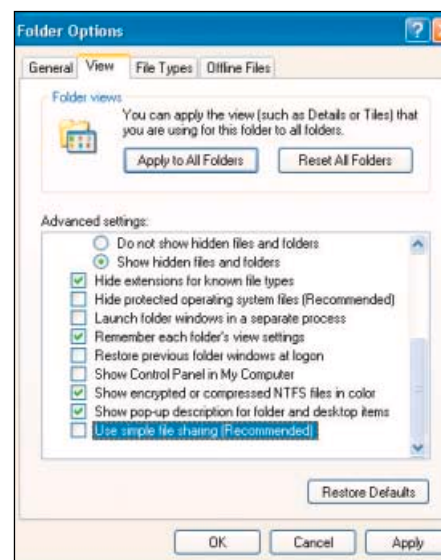


All you’ll need to run Windows Home Server is an old desktop PC. Here we’ve installed the Microsoft operating system onto a Dell Dimension 5000

way you can access the server and take client backups of any PC with the Connector installed, as well as run the management console and further configure how the software behaves.

Shared storage is what Home Server is all about and a key feature is the ability to treat that storage as one big resource using a technology called Drive Extender, which makes it easy to add extra disks. For example, we plugged an 80GB external USB disk into our server, then, using the wizard provided, added it to the available storage pool, making it immediately available to network users.

With more than one disk we were also able to replicate folders across disks to protect against individual drive failures. The copies take up space, but that seems a small price to pay, and replication is all handled in the background, so there is no real impact on server activity.



network. You can even get away with using whatever version of Windows is installed on that PC. You may need to tweak it somewhat, but it is possible although, again, there are reasons for choosing something more meaty, about which more shortly.

Server tweaks

For now, let's assume you're on a tight budget and want to use an old Windows XP desktop as a server. Anything earlier than that, such as Windows 98, and you may as well forget it, as it won't be up to the job, but XP can be used. After all, it has file and printer sharing built in as standard, along with tools to authenticate users and control who has access to what. You can even install a copy of IIS (Internet Information Services) and use an XP system to host a web server, as well as run a variety of applications, such as email and database servers.

There are, however, a number of limitations to bear in mind. As it stands, XP can't be used to host a Windows domain, which means sticking with workgroup networking. This is not a major concern for

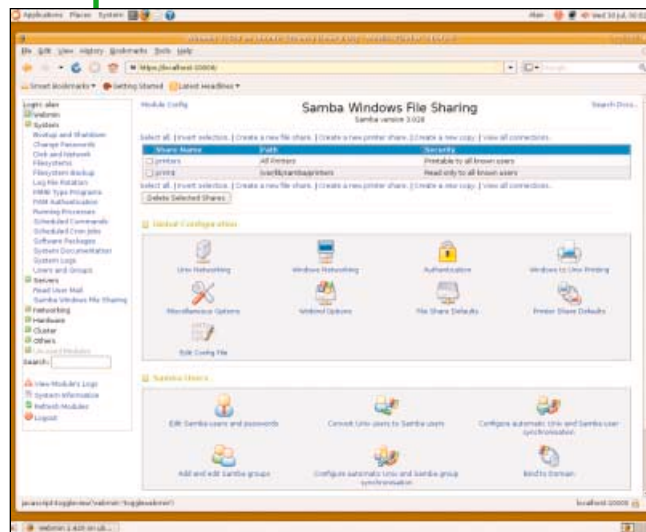
'You can re-purpose an old desktop PC for use as a server on a home network'

most home networks with just a handful of users to worry about. But the way in which XP shares files is, and here you may have to make a few changes, starting with the way shared disks are formatted.

NTFS needs to be used here rather than relying on a Fat file system, otherwise you'll find that you can't limit access to particular files and folders on the server. Similarly, it's important to disable the simple file-sharing (SFS) technology provided in XP, as this causes Windows to authenticate remote users as guests rather than individually, making it difficult to manage access.

Unfortunately, simple file sharing is all you get with Windows XP Home, so you're better off avoiding the Home edition altogether. It can be turned off on the Professional edition (you'll find it under My Computer/Folder Options – see screen left, after which XP will authenticate remote users using their login name and password, and enforce the access rights associated with those credentials. You just have to make sure there's an account on the XP server to match every name and password used to log on at the client PC.

Managing a Linux server



Webmin is a useful utility that can be run on most Linux distros to manage both the host operating system and applications such as Samba from a browser

as adding them later can be a lot more difficult.

Understand too that, although they have the same aims, Linux and Windows are quite different and it can take a while to get to grips with the way things are managed. Graphical interfaces are now commonplace, but there will still be times when the only option is to manually edit a

configuration file. That's not a difficult task in itself, but there's no single repository for such files, and file names and locations can vary depending on the distro involved.

For example, in Mandriva Linux there's a graphical tool and a wizard to configure Samba file sharing. In Ubuntu Linux, however, you have to edit the underlying smb.conf file to change most of the settings and manage the file-sharing setup. Similarly, some distros have custom tools to manage add-on applications such as Apache and MySQL, while others rely on configuration files.

If you're having problems working out how to get something to work, check the support forums for the distro involved as you'll often find answers there. Also, check if there are any add-on tools to help. A good example is Webmin (www.webmin.com), which can be used to manage a variety of Linux applications, including Samba, from a browser console, providing a single graphical tool that can simplify things.

The fact that it's not Windows doesn't mean you can't use Linux on a home server as most distros include a variety of open-source tools, such as Samba, that let you share files and printers using the same SMB (Server Message Block) protocol as used by the Microsoft operating system.

Hardware requirements are modest, too, and we had no problems putting our ageing Dell Dimension 5000 desktop with its Pentium 4 processor to work hosting a number of Linux implementations. We were able to configure useful add-on applications, including an Apache Web server and MySQL database, which come bundled with virtually all of the Linux distros as standard.

It's not all plain sailing, however, with a number of caveats to bear in mind when going down the Linux server path, such as looking for dedicated server distros rather than trying to use a desktop version (not all distros have this option). It's also a good idea to opt for any extra applications you want when installing the operating system

Why not?

Among the reasons you shouldn't use a desktop PC as a server is the strict limit on the number of network sessions that can be supported. With Windows XP it's fixed at 10, with a miserly five available if you're using XP Home – another good reason for avoiding the Home software. On a small network this may not be an issue, but it's surprising how quickly you run into this kind of restriction. Desktop versions of Windows are tuned to support a single user sitting in front of the screen at all times and, as such, don't perform well when sharing files and printers or running shared applications for remote

users. If you're really serious about your server, you'll need something better suited to the task.

Assuming you've decided against Windows XP, the most obvious alternative would be Windows Server as it is a capable and familiar product, but it's not cheap. A copy of the Standard Edition of Windows Server 2003 R2 licensed for just five users, for example, is likely to set you back £350 or more, depending on where you buy it. That's a lot of money for a home server, especially when you realise that all you really get is file and print sharing and a web server. Anything extra, such as an email or database server, will have to be sourced and

Find the best home server hardware

The majority of 'proper' servers will be designed for business use, but that doesn't mean they can't be used on a home network. If you do bring that old server home from work it's likely to be much more highly configured than is really necessary, not to mention big, noisy and expensive to run. Here are our recommendations for the perfect home server hardware.

Look for a computer with a small tower case – small enough to tuck away out of sight, but big enough to accommodate extra hard disks should the need arise. A quiet fan is another must-have, especially if you're going to keep the server in a habitable room, as is low-power consumption as it's likely to be on all the time.

There's no need for a Xeon or other server processor, especially if you're only going to share files, as this task requires very little processing power. A fast desktop-class processor is fine, although if you intend running applications on the server a dual-

or quad-core chip may be advisable. Likewise, you won't need much memory for file and print sharing – 512MB ought to be enough – but extra Ram doesn't cost much and you'll definitely need more to host applications. Don't bother with ECC (Error Checking and Correction) or any other fancy server memory options – you won't need them.

In terms of storage, serial ATA (Sata) disks are your best bet, capable of delivering enough capacity and speed to handle the needs of the home user at an affordable price. The latest 1TB disks are very attractive, but try to avoid relying on just one. A Raid setup might sound tempting, but it can be expensive and overkill as far as a home server is concerned.



A home server doesn't need to be big, but you will need room for extra disks as shared storage is what they're all about

Indeed, if you're going to run Windows Home Server, Raid is positively frowned upon, the Microsoft software taking care of data redundancy and backup in other ways.

USB2 or eSata (external Sata) ports will let you add external disks, both to expand storage and take backups, and

if installing software yourself you will need a CD/DVD drive.

A Gigabit Ethernet network interface or two will be needed (wired, not wireless), but go for a modest monitor and you'll only need a screen, keyboard and mouse to start with as most servers can be run 'headless' and managed remotely.

installed separately, and may add significantly to the overall cost.

You could go for the Small Business Server package, which includes Exchange Server, but at around £400 that's not cheap either and still isn't a complete solution. Windows Server in all its guises is really aimed at business rather than home users, takes a lot of management and is best avoided. Having said that, there is a version of Windows that is suitable for home use – Microsoft's Windows Home Server (WHS).

As you like it

Based on Windows Server 2003 R2, WHS is heavily customised to make it both easier to manage and provide the kind of features that home rather than business users want. For example, it makes it easy to share files and access them whether on the home network or connecting remotely over the internet. Adding extra disks is also easy, whether using internal drives or external USB disks. Plus it lets you make backups of client PCs to shared storage, with a built-in scheduler to help automate the process. That may not sound like a whole lot, but it covers most of the home use bases. Extra functionality can

be added by way of add-ins. For example, you can enhance the media-streaming capabilities of WHS, run your own email server, protect your network against viruses and spam and so on. There's a growing collection of add-ins available from

commercial developers and as freeware or shareware.

WHS itself can be purchased in two ways, the easiest being as part of a ready-made hardware solution from companies including

Fujitsu-Siemens and HP, both of which sell home server products

starting at around £400.

Alternatively, you can buy the software by itself for just £90 for a 10-user licence and install it on hardware of your own (see box on Windows Home Server).

And so to Linux

Windows, of course, isn't the only operating system, and it's not at all uncommon for home servers to run Linux instead. The advantages are pretty obvious, with price being one of the key drivers, although you do need to be careful. Licences for business-oriented distros from Red Hat and Novell (Suse Enterprise), for example, require you to pay for support, which means you could end up paying almost as much as you would for Windows.



You can buy a ready-made Windows Home Server or build a server yourself

However, most of the others can be downloaded and installed for free, and on as many servers as you want. All you have to pay for is the download time and the cost of any media you put the software onto. If you've bought the DVD edition of *PCW*, you won't even need this, as you'll find our monthly selection of the latest releases included on the 8GB disc.

Popular distros to consider for home use include Ubuntu (www.ubuntu.com), Mandriva Linux (www.mandriva.org), Fedora Core (www.fedoraproject.org) and Opensuse (www.opensuse.org). All are freely available and, unlike Windows, come with a host of bundled applications to enable you to put together a complete server capable of doing a lot more than just share files and printers.

A virtual finish

Finally, if you've investigated the world of server-based networks, you might wonder how the much talked about idea of server virtualisation fits into the home server equation. The answer is that, for most users, it doesn't.

There are several virtualisation technologies available but, in essence, all do much the same job, which is to let you run several virtual servers on one physical machine. Benefits include being able to

'The easiest way to purchase WHS is as part of a ready-made solution'

consolidate several servers onto one platform, which is great if you're a large corporate, but it is something very few home users ever need to do.

Virtualisation also makes better use of the processor and other hardware resources but, again, that's not something home users are likely to lose sleep over.

It could be of use, for example, where you'd like to run a particular server application that's only available for an operating system other than the one you're using. Install one of the free server virtualisation tools, such as VMWare Server, or Windows Virtual Server 2005 R2 and that's fairly easy to do. But there are costs involved as you still need to install and license the guest operating systems. Despite being relatively straightforward, server virtualisation is an extra level of complexity that anyone thinking of deploying a home server could well do without. **PCW**

Alternatives for sharing files

If you only want to share files, a traditional server may not be your cheapest or best option. Indeed, if starting from scratch you can save both money and aggro by opting instead for a Nas (network-attached storage) appliance.

In effect a ready-made server, most Nas appliances will run a variant of Linux configured expressly to share files over a Lan. All you have to do is plug the box provided into a network port and switch it on.

As far as your Windows desktop and notebook clients are concerned, the appliance looks and behaves like an ordinary server, advertising network shares that can be browsed, accessed and mapped to local drive letters as normal. Most can also be used by Apple Mac and Linux PCs, with bundled software to back up your client PCs another common option.

Very little setup or day-to-day management is needed, with everything done via a browser and little or no technical knowledge required. The hardest part is deciding what to buy, as storage appliances come in vast array of shapes and sizes.

The cheapest are single-disk devices such as the Buffalo Link Station Pro (starting at around £117 for 250GB). These are ideal for home users looking to share photos, music files and so on, with larger capacity models, up to 1TB or more, available for those wanting to share movie downloads and other large files.

However, as you move up the scale you might want to consider a dual-drive appliance, such as Netgear's Readynas Duo (from £220 for 500GB), as these can be configured to continually back up your data to a second disk to protect against hardware failure. If it's the



A Nas device may be the best option if you just want to share files

ultimate in capacity and availability you're after, you might want to consider a multi-disk appliance, such as the Synology DS-508 (starting at around £600, not including disks) capable of delivering several terabytes of Raid-protected storage. If you want to build your own Nas enclosures, such as the Lindy Dual HDD Nas (pictured), it will cost you less than £100 and can house two disks to give up to 1TB of storage.

Many of these appliances also offer additional functionality beyond simple file sharing, such as built-in UPnP media servers to stream music, photos and movies to network media players, for example, and a web server to host an intranet website for even simpler file sharing. There are even some with built-in Bittorrent P2P (peer-to-peer) clients.

No matter what the specification, everything will be built in, ready to use with no licensing issues to worry about. Of course there are drawbacks. One

'gotcha' is that network shares don't have a Windows recycle bin, and so you can't recover a deleted file unless the Nas firmware provides its own undelete utility, or you have a backup to restore it from. And adding space may not be easy and you probably won't be able to run your own applications, but for most of us those aren't major issues and a Nas appliance will do quite nicely.



Nas servers are available in a variety of formats – from single-disk models to multi-disk devices with built-in Raid protection

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Tidy up your digital life

Keep on top of your documents by turning them into easily searchable files on your PC. Nigel Whitfield explains how

It's the 21st century and, along with the flying car, we've been cheated out of the paperless office. Anyone who has a computer knows that they tend to create more paper, not less. And with the bills, letters and other things that (still) arrive in the post, keeping on top of all your documents can be a nightmare.

If you run a business, or even if you just have to do a tax return, you'll have to keep some paperwork for years, just in case it needs to be checked. All too often that means a storage box with something helpful like 'Bank' written on the side, and a pile of statements tossed into it.

But with scanners cheaper and more advanced than ever, and fast PCs capable of recognising text more accurately than before, it should – in theory – be simple to turn those piles of disorganised paper into a searchable database that lets you retrieve what you want, when you need it. In this feature, we're going to find out how.

In the past couple of years, it has become increasingly common to see footers on the bottom of emails, asking people if they really need to print them out. You might have

thought it was self-evident, but over time, many people have got into the habit of keeping things on paper, sometimes to the point where older documents that we created on a computer aren't available digitally any more. They might, for example, be trapped in a file format that you are unable to read, or worse, they've been deleted and all that you have left is a paper copy.

When we had computers with tiny hard drives – 20MB wasn't uncommon back in the 1990s – it made sense to delete things we didn't need and keep a printout instead, in case you needed to refer to it later.

Now though, the balance has swung firmly in the other direction.

Hard disk capacities are huge and many of us have plenty of space. So, far from deleting digital versions of documents because we need to free up the hard drive, it's practical to go in the other direction, digitising information that exists only on paper. And with today's faster computers, together with plenty of space to store indices, it should be possible to search for things in the blink of an eye – potentially retrieving the information you want far more swiftly than rummaging through even a well-organised filing cabinet.

The olden days

Of course, document management, as this sort of thing is called, isn't anything new. There have been tools for performing optical character recognition (OCR) available for ages and, at its simplest, you could just scan pages and organise the images and recognised texts in a collection of directories on your hard drive. In the 1990s, various companies made attempts at more sophisticated systems, including some dedicated to particular purposes, such as business card scanning, with software that not only read the letters and numbers on a business card, but also attempted to interpret what part of a contact's details they represented, filling in the appropriate fields in your address book.

OCR software improved too, allowing you to view the results of recognition and call up an image of the original page if there was a word that was suspect, so you didn't have to go back to the original. And products such as Visioneer's Paperport scanner, which was designed to sit between your keyboard and monitor, allowed you to scan just about anything and then add annotations, making some form of basic document management accessible to most people.

But scanners were still expensive, and even more so when fitted with automatic



Fujitsu's Scansnap S510 lets you scan both sides of a document and create searchable PDFs

document feeders (ADFs). Storage space was expensive and, with the slow processors of the day, recognising even well-printed text was tedious. If you had an archive of documents that you wanted to scan, or even more than a few a day, it would be a major undertaking for most people.

State of the art

Now, however, it doesn't have to be like that. Whether you just want to keep a few important documents organised – insurance policies and receipts from online shopping, for example – or you have hundreds of documents that need to be indexed, it's a lot easier than you might have thought to organise everything on the PC.

Modern document management systems can store documents in dual formats – both fully indexed text, side-by-side with an image of the original. So you can find the right piece of paper by searching, and then print out a facsimile if a hard copy is needed.

If you want to turn a document into something editable, it's much quicker than it used to be, and even fairly complex layouts can be reproduced in programs such as Microsoft Word.

You can also expect to be able to add information to a document management system, without having to print and scan it first. So you can, for example, print the receipt page from an online purchase and have it automatically added

Collaborative document management

For most home users and small offices, document management is a matter of archiving and retrieving information. But there are cases when it needs to be much more flexible than that, allowing different people to work on documents while keeping track of who's done what.

Traditionally, this sort of job needed expensive software, including tools such as Microsoft's Sharepoint. However, there are a growing number of open-source tools,

such as Xinto (www.xinto.org), that allow you to manage a central store of documents on a server, access them from anywhere and do full text searches.

They also allow for discussions about documents and keep track of revisions and versions. So if your job involves creating documents as a group, such as documentation or manuals, this sort of tool may well be worth a look, but for many, it will be overkill.

to your document database, making it easier to find when you do your accounts.

It's possible for modern systems to offer web access or synchronisation between devices, so if you need to check the claims number for your household insurance, for example, you can access it wherever you are.

Get it in!

If you like the idea of what document management software is capable of, the next step is to work out what you'll need if you want to organise your own paperwork, and how much it will cost you. Speed and ease of use are probably a lot more important here than many people realise – if it's simple to digitise every document that arrives in your office, you're much more likely to do so than if it takes five minutes for every page.

Key to most document management systems is a scanner. And while you can buy one more cheaply than before, those at the bottom end of the market are not really going to be much help – a standard flatbed scanner will make adding new printed material to your digital archive a chore. So something with an ADF is essential – and these too are more affordable than they used to be.

For example, Kodak's Scanmate i1120, with a list price of around £520, can be bought online for less than £400. It's a compact desktop

scanner with a document feeder and support for duplex (double-sided) scanning that comes

Kodak's Scanmate i1120 comes with software to create searchable PDFs from your documents

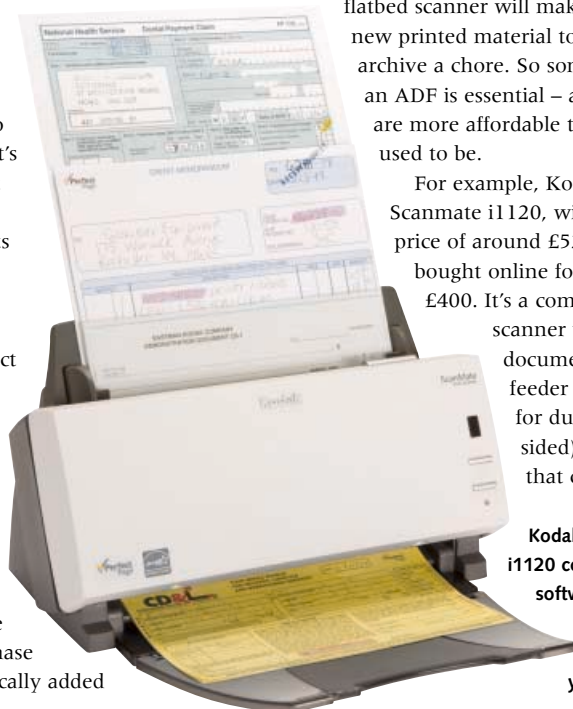


Epson's GT-2500 can scan 27 pages per minute, from a 50-page document feeder

bundled with OCR software, and Nuance's Paperport 11, a document management application that can create searchable PDFs of your files.

Fujitsu's Scansnap S300 is a portable scanner, with a capacity of only 10 sheets for the automatic document feeder, but nevertheless it can scan both sides and create searchable PDFs, for around £200 – though with its limited capacity, it's more suited to home users than small offices. The supplied software also includes a business card reader and OCR. The bigger Scansnap S510 (around £340) takes up to 50 A4 sheets and it can even scan A3 pages with the help of a special carrier sheet. The software includes Acrobat 8 Standard, Abbyy Finereader OCR software, a business card database and Fujitsu's Scansnap Organizer.

While scanners like these come with software, you can also buy it separately – packages like Omnipage, Textbridge and Abbyy Finereader can be bought separately, and they'll work with just about any scanner, thanks to their Twain compatibility. So if you have a scanner with a document feeder, software could be all you need – just check that the scanner has Twain drivers (the Scansnap models don't). That said, don't underestimate the usefulness of duplex scanners, such as the Kodak and Fujitsu models – rather than scanning one side and then the other, these can scan both sides at the same time, making it much quicker to capture.



If, however, you have a large number of documents – a complete office worth of paper – then you may need a heavier duty scanner, with a high-capacity document feeder, and perhaps a flatbed option, for documents that can't be fed automatically. These start at around £400, for products like the Fujitsu fi-5015C, £60 for Epson's GT-2500, which can scan 27 pages per minute, up to well over £1,000 for models, such as the Fujitsu fi-6230, which are designed to process hundreds of pages automatically.

Document formats

In the past, when you scanned documents, you could do one of two things with them. You could use OCR technology to turn them into an editable document, or to store an image, allowing you to print out a facsimile. And document management software would let you attach text annotations and descriptions to images, so you could add keywords such as 'will' or 'insurance' to help find the right image later.

With OCR, you'd have a more or less accurate copy of the document and, if there were errors, a couple of clicks would show the original scan at the point where the software couldn't work things out.

Summon the search box in Acrobat Reader with Ctrl & Shift & F...

Mac users can search all the documents on their system – including PDFs – instantly, using the built-in Spotlight tool

But having an image and a separate editable document isn't ideal for archiving and retrieval – you might lose one part, or not add all the appropriate words to the image, slowing down searching.

Step forward 'Searchable PDF', a format supported by Adobe Acrobat 7 and later, as well as by most modern scanning packages. If you're looking for software to work with a scanner, you should insist on the ability to create Searchable PDFs. While ordinary PDFs describe how to create the page, a Searchable PDF is effectively two layers. One layer is the image of the original document, allowing you to print a facsimile if you need to, while the other layer is text, created by performing OCR on the original. While it's subject to the same issues as any sort of OCR, it does have the advantage that where there's confusion or badly recognised text, you don't have to hunt through the original – everything works transparently, so the image on screen is the original document, at exactly the right point.

If you already have a scanner, but your software doesn't support Searchable PDF, it's worth checking for upgrades – the latest versions of most will. Alternatively, Acrobat Standard 9 will also do the job, but at £311 for a copy, many home or small-office users may find it more economical to simply buy a new scanner and use the software that comes with it, or to buy one of the alternative packages we'll mention later.

Another useful point to bear in mind when it comes to software is that not all the documents you want to keep track of will arrive on paper. Software, like Acrobat, that works as a virtual printer driver

is useful too as it means you can save the checkout pages on websites, and anything else that appears on screen, directly into your document store. Mac users can print to PDF as standard. Open Office and several free or cheap Windows tools will do the same – check this issue's cover disc for a selection.

Hide and seek

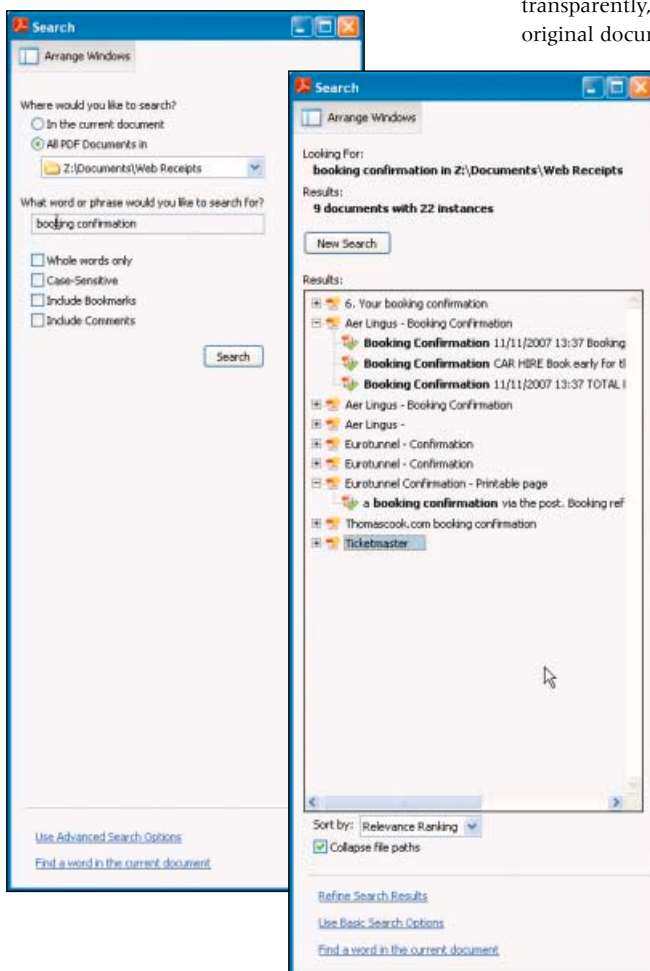
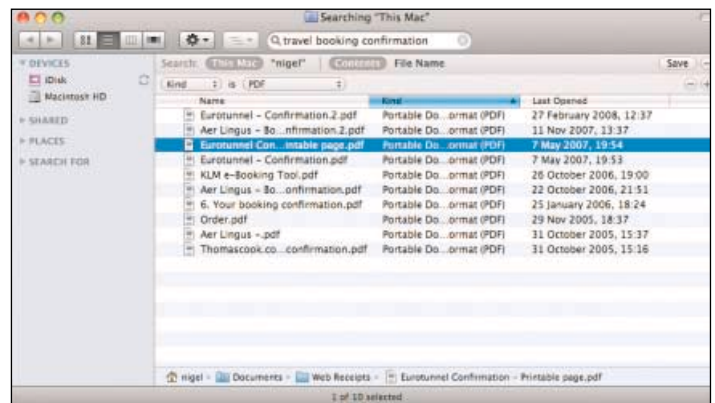
Acquiring documents is only half the job of course – and a massive collection of scanned pages is no use at all if it can't be searched. Adobe Reader 7 or later will allow you to search the contents of your hard drive for PDF files containing words or phrases (press Ctrl & Shift & F to call up the search box), but it's pretty slow.

In fact, Mac users have an advantage here, as the built-in Spotlight search tool automatically indexes everything on the hard drive, including PDFs. So, saving your scans into a selection of folders will allow you to find them by category, and Spotlight will track down text you're looking for within seconds, allowing you to open a PDF and see the highlighted word in context.

Windows users don't get the same functionality with their Desktop search facilities, but it's possible to index PDF files with a plug-in filter that extends Windows Desktop Search, called Foxit PDF Filter – available at <http://gallery.live.com/default.aspx?pl=6> – though the reports there from users suggest it's not without issues. An alternative is Google's Desktop Search, which will also allow you to find text within PDFs.

Add one of these search tools to Windows and you'll have a fairly flexible system for retrieving information, coupled with a scanner that creates Searchable PDFs – we'd go so far as to say that for many home users, that could be all you'll need.

What if you really do have a lot of documents? If you've been running a business for years, or you simply generate lots of paperwork, a collection of folders on your hard drive, even if they're indexed and searchable, is likely to become unwieldy – and any flat arrangement of data suffers when you want the same thing available in



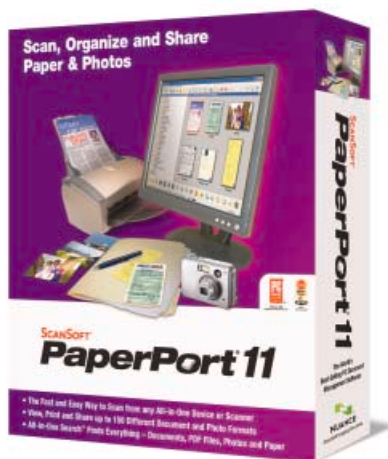
... and then wait – without an index, finding the right documents can take a considerable time

different ways. For example, should the contents insurance policy be filed in the 'Household' folder, or the 'Insurance' folder?

The traditional way of solving this problem is with a database, and document management is no exception. Microsoft's Sharepoint Server can be used, together with indexing tools like Foxit's

PDF filter, to allow documents stored on a server to be searched, and there are open-source tools too. These, though, tend to be better suited to collaborative working, rather than simple archiving and searching (see the Collaborative document management box).

There are some desktop tools that can make managing your documents easier, without forcing too much structure on you or your business. Paperport is owned by Nuance (www.nuance.co.uk), the same company that now owns the Omnipage OCR application



Nuance's Paperport allows you to tag scanned documents with keywords, as well as performing full text searching

and, as well as allowing scan and print to PDF, it includes searching and indexing facilities, and will allow you to tag files with keywords as well as doing full text

searching. The professional version of Paperport (£100, compared to £50 for the standard) allows you to search through documents on an office network, too.

Fujitsu's Rack2filer is aimed at transforming the filing cabinet and folder metaphor directly to the PC, offering 'shelf' and 'folder' views as well as annotations and full text searching – various trial or 'lite' versions are included with some of its scanners. Also worth a mention here

is Nuance's Productivity Suite, which includes Paperport, Omnipage, PDF Converter (for creating and editing PDFs) and Dragon Naturally Speaking, for £270; if you already have a scanner, this could be a very worthwhile addition.

Take note

X2net Onestore (www.x2net.com) takes a slightly different approach to managing your information. It costs less than £50, and stores documents in its own database, allowing you to categorise them, add keywords and search. You can scan directly into the program, or add copies of files already on your PC, and there are tools to add clipboard contents, screen grabs, and a virtual printer driver. It's also possible to remotely access the database from other PCs on the network, or via a web browser – but what it doesn't do is allow full searching of the text of files that you add to the store, so if you have lots of documents in a format such as Searchable PDF, it's perhaps best used as an adjunct to full text searching, rather than a substitute.

Another interesting approach is that taken by Evernote (www.evernote.com). This web-based service allows you to store scanned images, snaps from your camera phone, emails and web clippings. The service makes everything available across all your devices – Mac, Windows, mobile phone and the web – and can even find text within photos and other images. It's free, but you're limited to 40MB of data per month,

and it's really more suited to short items than large scale document management.

If you've decided that it's worth trying to use the computer to make sense of a mass of existing documents, there's one other thing it's vital not to forget – backup and storage. While some documents can be safely disposed of, as long as you can reproduce a facsimile by printing it out, that's not always the case, especially with legal documents – if in doubt, ask your lawyer or accountant for advice. Make sure that you have somewhere safe and secure to store original paperwork – and make sure you have a good backup strategy for your digital archive too.

Whether it's just a few documents you want to scan, or boxes full of them to make space in the spare room, thanks to faster PCs and better scanners, it's much easier and quicker than it used to be, and it needn't break the bank. **PCW**

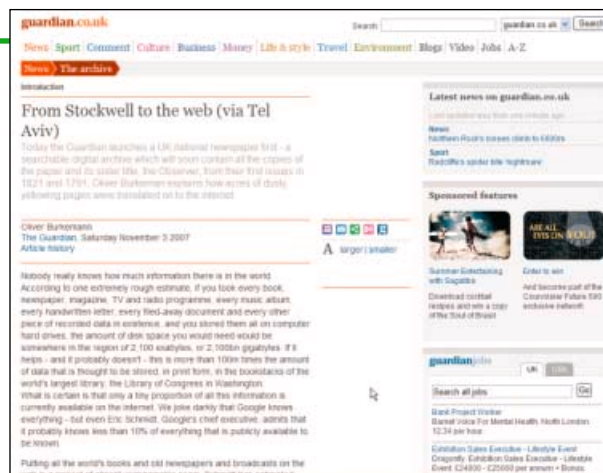
Out of the ordinary

There are certain types of document that are fiddly or nigh impossible to scan, for example magazines, books, or large documents such as newspapers. The former can't readily be put through an automatic scanner without cutting them up first, while the latter need much larger scanners than are found in the typical office.

For a business with lots of documents that need scanning, the sheer amount of time taken to load paper into a scanner, even one with an automatic feeder, not to mention checking that it has been catalogued correctly, can be substantial.

The complex layouts in newspapers and magazines pose another problem. Stories and articles may start on one page and end on another, and not all the text on the same page may be related, so everything needs to be checked to make sure that all the parts of an article are stored together and searchable.

In some cases, it's a task that's best undertaken by specialists, who'll be able to take your documents, scan them and return them to you in the format you need. Sometimes, a little lateral thinking is needed too. If, for example, you work for a business that has previously archived material to microfilm, it may be much more convenient to scan the microfilm rather than to go back to the original paperwork. Unless you need to add something extra, such as colour images, the microfilm has the



If you have magazines or newspapers to archive, size isn't the only problem – following articles across several pages is beyond the ability of most software

advantage that it has already been turned into a format that can be fed through a digital scanner much more rapidly.

This approach was taken by *The Guardian*, when it undertook the digitisation of its archive of old newspapers, which spans over 200 years. For an insight into how that was done, it's worth reading the article at www.guardian.co.uk/digitalarchive.

Book scanning is even more daunting. Unless you're Microsoft (which has recently shut down its book digitising project) or Google (<http://books.google.com>), or are prepared to destroy your book to get at the individual pages, it's probably wisest to leave such projects to the experts.

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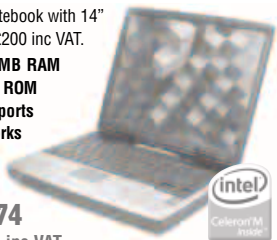
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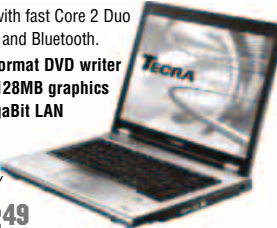
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Nikon

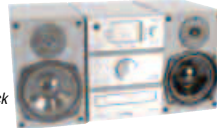
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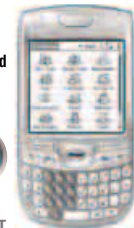
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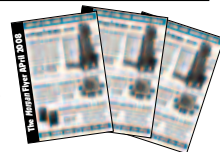
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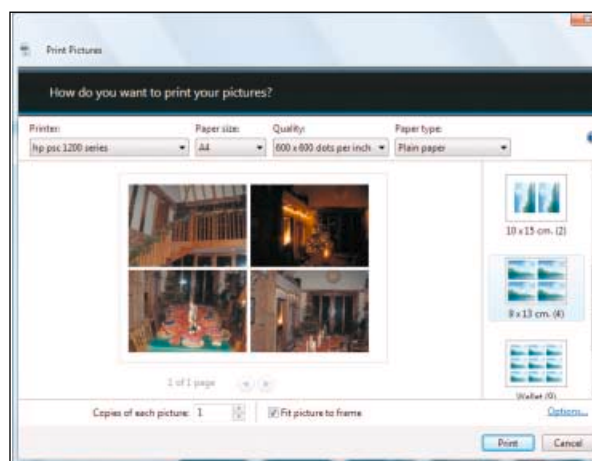
Economy drive

There's no reason your computer habit has to hit you in the wallet during the credit crunch. Joe Cassels points out some basic, but timely, cost-cutting measures

The past months have included much dark talk of a credit crunch and falling house prices. This has been not only depressing for those trying vainly to buy or sell property, but rapidly rising fuel and energy prices have made many more people feel the pinch directly. When faced with the need to cut household costs across the board, it's only sensible to examine your computing requirements to see if there's any potential to make some savings – however small. There's quite some scope to reduce your IT-based outgoings by making a few simple changes to your behaviour. As a notable supermarket would have us believe, every little helps.

Computers can be a drain on finances in several areas. First, there's the initial cost of purchase, plus any peripherals or software that you may add as time passes. Printing consumables such as ink, paper and toner constantly gnaw away at the bank balance, as does the cost of removable media like recordable CDs and DVDs.

Security suites generally demand annual subscriptions, and then there's the ISP knocking at the door every month for its cut. Energy costs add to the total, too; just having a computer plugged into the mains causes a trickle charge to your electricity supplier, and that's before you even turn it on. Using hibernate or snooze mode results in yet more



Windows enables you to print several photos on one page, which saves paper, if not ink

Hardware costs

It may sound obvious, but you should only upgrade hardware when it's absolutely necessary. If a purchase can't be avoided, then shop around. Use comparison sites such as PCW's Best Prices (www.pcw.co.uk/bestprices), Kelkoo (www.kelkoo.co.uk), Price Runner (www.pricerunner.co.uk) or Shopping.com (<http://uk.shopping.com>) to find

power dribbling away, and then there's the router, printer and external drive, which are all too easy to leave turned on. If you indulge in online backup or run a website, these also result in monthly charges.

The costs can seem never-ending, but it is possible to curb them without resorting to pen and paper or semaphore for communications. By standing back, looking at the basics and taking each area in turn, you'll see that there are many possible savings to be made, as we're going to try and remind you of those in this feature. Small savings in multiple areas soon add up, leaving you with a far more manageable computing bill.

the cheapest option. No price comparison site covers the entire market, however, so use several. Also check out Ebay for new and second-hand goods. If you do so, always check the small print to ensure you know what you're paying for and be wary of common tricks like including most of the purchase price in the postage cost.

If you're shopping on the high street, look for deals on shop-soiled or refurbished goods, or check out online retailers' surplus or B-grade stock listings. These are often available at bargain prices. If you do end up replacing your system, consider what to do with the old kit. In many cases, it can be

CUT COMPUTING COSTS

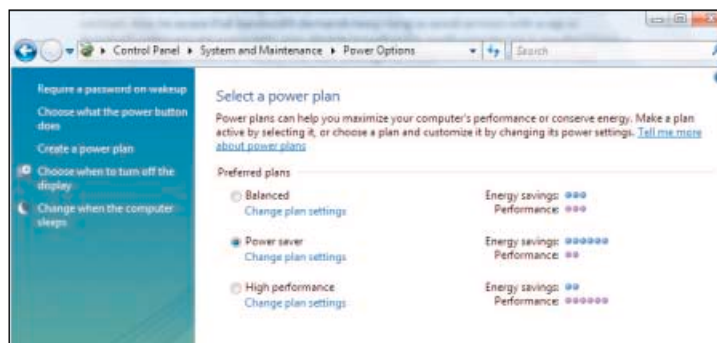
pressed into service in place of a common peripheral, like a network-attached storage (Nas) drive, or it could be revived by installing a cut-down operating system. See the box on page 54 for some ideas for re-using older hardware.

Photo printing

Home photo printing can end up quite expensive when you factor in photo paper, inks and the cost of printing mistakes. For the good of your wallet and that of the environment, it's best to avoid printing where possible. There are plenty of ways to share photos without producing a hard copy. Newer TVs and DVD players often include a Secure Digital or other Flash media slot, which enable you to display photos as a slideshow on the telly. You could also show off your pictures in a digital photo frame or simply on a laptop placed on a table.

Also consider the many possibilities for sharing photos online – from resizing them and sending via email to using services such as Picasa Web Albums (<http://picasaweb.google.com>), Flickr (www.flickr.com) or Photobox (www.photobox.co.uk) to upload photos and share them for free. Many people are understandably concerned about putting their private photos online, especially those including children, but it is possible to share them only with family or friends. To use

If you can't turn your computer off, optimise its power consumption with one of Vista's power plans



Flickr, browse to www.flickr.com and log in using a Yahoo account. Opt to upload photos and browse to the files you want to add. Under Set Privacy, choose Private and tick Visible to Friends, Family or both. Click Upload. Once complete, you can add tags and a description to each image. Only people who you share the photo with can view it.

If you already have photos uploaded to Flickr that you want to make private, browse to the image you want to alter and open it. Under Additional Information on the right of the picture, click Edit next to 'This photo is public'. Select Only You (Private) and choose whether to share it with friends and/or family by ticking the relevant boxes.

For Picasa Web albums, log in at <http://picasaweb.google.com> using a Google account and either opt to create a new album

by choosing Upload, 'Create a new album' or open an existing album and choose Edit Album Properties. At the bottom of the album properties window, select Unlisted. To share an album with friends or family, open it and choose Share Album. Enter the email addresses of the people you want to share it with and provide a short covering note.

Professional printing

If you must print out photos, consider using a kiosk in a high-street store (although these usually offer fairly limited options) or an online ordering service, which give predictable results at a consistent price. Try Photobox or Jessops Picture House (www.jessops.com), each of which offers some free prints when you sign up. They post the prints to you and you don't pay for your printing mistakes.

PDF options

A great way to archive items without having to print them out (perfect for items such as online ordering receipts and invoices sent by email) is to convert them to PDFs. You can do this for free by installing CutePDF Writer, which is available free from www.cutepdf.com. You'll also find several alternative PDF utilities at the PCW Downloads site, www.pcw.co.uk/downloads. The software adds a virtual printer to your system, which you can select from any Print dialogue box. You then simply provide a file name and location for the resulting PDF.

Printing consumables

Some printing is inevitable, but there are still ways to save on the many consumables you end up using. For printing text, consider using your printer's draft mode. This can save up to half the ink or toner expended in high-quality prints, yet usually provides adequate output for letters and most business purposes. You can make further savings by using compatible cartridges or refilling systems. Manufacturers often warn against refilling or using compatibles, but cynics say this is because doing so eats into their profits – you can invalidate a guarantee this way, however, so it's best to only do so once the printer's warranty has expired.

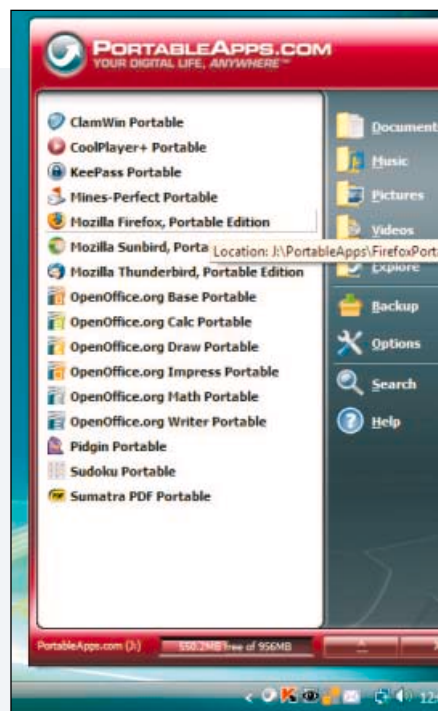
A real risk associated with refilling a cartridge is mess. Ink and toner are easy to

Using other computers

Looking for a laptop to give you portable computing, but can't afford the outlay? Why not do away with the notion of your own device and carry your documents and most useful applications around on a Flash drive? Portable Apps gives you the freedom to run a browser with your bookmarks and extensions and an email client that's set up for your account, both of which are ready to run on any PC you care to plug it into. The PC just needs a free USB port.

To use it, get a 512MB or larger USB flash drive and browse to <http://portableapps.com>. Download either Suite Lite or Suite Standard. The latter includes Open Office, but is a much larger download. If you're only likely to need word processing from the office area, Suite Lite is all you need. Connect your USB device and launch the installer, pointing it to the drive when prompted, and complete the wizard. You can now use the suite at almost any public computer.

The default installations are fine for most people, but if you need to find out more or want to customise the installation, check out our recent guide to Portable Apps at www.tinyurl.com/59pbj5. Mojopac Freedom (www.mojopac.com) is another way to carry a



Use Portable Apps to carry your own browser, email program and office suite around in your pocket

full version of Windows around on any USB drive. This package's benefit over Portable Apps is that you can install and run normal Windows applications.

spill and the fall-out could cost more than simply buying a new cartridge. Most refilling systems involve using a syringe to inject ink into an empty cartridge.

Don't allow a cartridge to completely empty before refilling, though, as this can lead to ink drying out and clotting. Some vendors supply flush solutions to clean out print heads and cartridges. Don't be tempted to use tap water, though; the impurities in it are big enough to clog the tiny holes in the print head. Some laser toner canisters are designed to be open and refilled. Others need to be carefully drilled open and resealed. Because toner is such a fine powder, it can easily make as much mess as ink. You can find a range of toner refill kits at Refill Toner (www.refilltoner.com).

If you want to avoid mess, buy refurbished refilled cartridges. There are many vendors that will refill ink and toner for you. Check out Ink Tec (www.inktechshop.co.uk) or Cartridge Save (www.cartridgesave.co.uk) for two examples.

Recordable or re-writable?

Re-writable CDs and DVDs are generally a better investment than record-once varieties, although they cost slightly more in the first place. In most cases, data recorded to disc can be safely wiped and recorded over at some point, unless you really need to archive it. Bear in mind, though, that optical media isn't ideal for archiving anyway, as the lifespan of discs is difficult to predict.

For everyday data transfers, Flash drives are preferable. They can be overwritten thousands of times and it's possible to temporarily mark them as read-only to avoid overwriting data.

Saving power

Over the past few years, PCs have become increasingly power-hungry. The IT industry has been notoriously slow to pick up on the energy conservation message. You can save some money by ensuring that you don't have more devices turned on than you need and turn things off properly

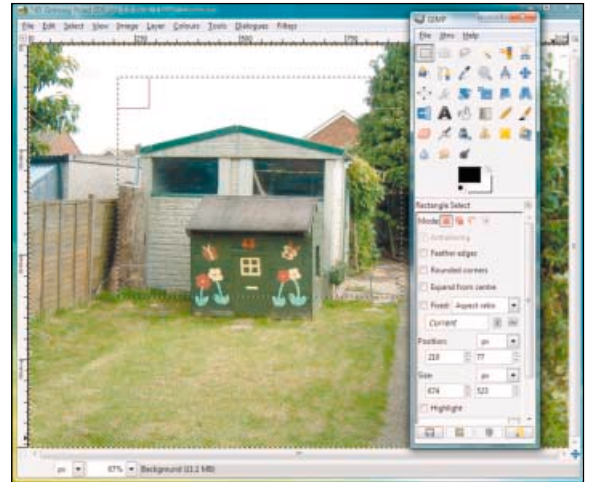
The Gimp provides professional-grade photo editing for free, although it's not the most intuitive application available

at the mains, rather than relying on standby.

If you aren't using your computer for a period of time, turn it off. There are people who believe that this is bad for the components, but there's no evidence to support this. What's certain, though, is that if you leave a PC on standby or even just plugged in, it will use power, as we explained in last month's feature on power supplies (*PCW*, October 2008, www.pcw.co.uk/2223197).

Equipment left on standby can consume a surprising amount of power. The energy rating of each item varies according to its specification, but an average computer uses around 22W, even when it's supposedly turned off. A laser printer devours 25W while on standby and a laptop sucks up 2W. To prevent this 'dripping tap' effect, you can turn your computer off at the power supply or unplug it, but you have to remember to do so. A OneClick Intellipanel power strip from www.oneclickpower.co.uk isolates the power to a full extension strip when you turn your computer off. It costs £39.99, but you could recoup your investment in a couple of years.

Windows power management can save you some money if you really need to leave



your PC on for a period of time. Vista has a few useful predefined power-saving schemes, and the options available are much more comprehensive than XP's. Enter Control Panel and choose System and Maintenance, Power Options. You can choose between a number of power plans, depending on what savings you want to make. Power Saver is the most efficient plan. You can also modify it to increase the savings. Click Change plan settings. Use the dropdown lists to select how much idle time you want to pass before the display is powered down.

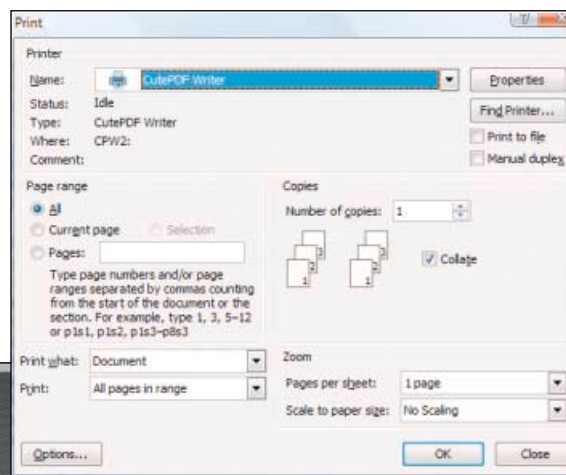
Cutting connection costs

The broadband market is very competitive, so it's likely that you can make some savings if you're not shackled by an existing contract. The best deals are available at exchanges

where local loop unbundling has enabled BT's competitors to install equipment. Generally, this has happened where it's been economic to do so, which is mainly in urban areas. Bundling broadband with phone packages or TV reception enables the likes of Talktalk, Orange and Sky to offer very attractive deals. Use price comparison sites such as USwitch (www.uswitch.com) or Money Supermarket (www.moneysupermarket.com) to compare prices. Be sure to also check any deal offered with the provider itself, as

prices can change quickly.

The best deals often involve committing to a 12- or 18-month contract, however. Also be aware that bandwidth demands keep rising, so avoid services with a cap or threshold unless you're a very light user. Mobile broadband is worth considering if you don't have a landline, but bear in mind that none of the main packages provide unlimited data and are best avoided if you want to use



Above: Avoid printing receipts and other paperwork by using CutePDF to save them as PDF files

Left: Turn an old PC into network-attached storage courtesy of the FreeNAS operating system



Remake and remodel

Why throw away an ageing computer when you can put the hardware to good use? Here are five ideas to get you started.

Nas box

Old computers contain upgradeable hard disks, so why not create your own file server? Freenas (from www.freenas.org) enables you to convert a PC into a network-attached storage (Nas) box. Download the ISO file and burn it to CD. Set up the computer you want to convert to boot from this disc. Install the full operating system to HDD and create a data partition. Remove the CD and reboot. You can now detach the monitor and administer your Nas box by pointing your browser to default IP address 192.168.1.250, and map the drive to any PC connected to your network.

Media player

For a full media centre experience, you'll need cutting-edge kit, especially if you want to record, pause and transcode TV. However, if you ditch the need to record and rewind TV, your hardware requirements will be less demanding. Why not turn an old laptop into a streaming media player for TV and radio via the BBC iPlayer? You'll need a browser that supports Flash and other media players if you want to get internet radio stations, but these all come in Xubuntu (www.xubuntu.org) a lighter version of the popular Ubuntu.

Firewall/router

Network address translation (NAT) routers aren't hugely expensive, but if you've got old kit lying around, why invest in one when an old PC will do the same job? Smoothwall Express (from www.smoothwall.org/get) is reasonably easy to set up. Smoothwall colour-codes its network connections so the one connected to the internet is known as the red network adapter. This could be an ADSL modem if it's supported. The green network adapter is connected to the local network. Once you've installed Smoothwall and configured the basic interfaces, you can manage it via a web interface, so there's no need to keep a monitor connected.

Web proxy

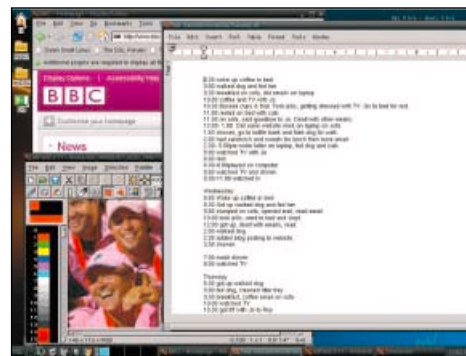
One way to reduce strain on your internet connection is to install a web proxy. This caches pages, images and media files that have been previously downloaded, doing away with the need to repeatedly download the same files. The best-known free web proxy is Squid (www.squid-cache.org), which runs under Windows or Linux.

Smoothwall includes Squid as part of its default setup.

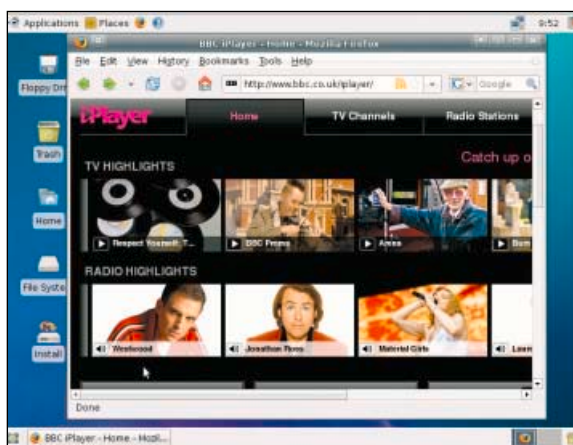
Revived workstation

Unless you're a serious gamer or need high-quality video, most kit turned out in the last decade will still make a fine workstation.

Damn Small Linux handles email, browsing, spreadsheets, image editing and word processing with ease



Let Xubuntu transform an ageing laptop into a Wifi radio



Lacking a Nat firewall? Smoothwall Express can transform an old PC into a new one



It's simply a matter of reducing the software overheads. Damn Small Linux (www.damnsmalllinux.org) is a distribution that weighs in at under 50MB and is designed to run from a credit card-sized CD, although it is possible to install to the hard disk. It includes a browser, office applications and image-editing capabilities. An old Pentium 200 with 64MB of Ram and a CD drive will run DSL with no problems. It has even been successfully run on old 486 computers. See this month's Hands On Linux for more details.

video services such as BBC iPlayer or Youtube. Unlimited packages are rarely precisely that; most have fair use agreements that are easy to fall foul of after an orgy of downloading. However, they do provide the reassurance of a predictable monthly outlay if you don't go nuts downloading stuff.

Software costs

It's easy to make some savings on software if you're prepared to investigate free options.

Most popular desktop applications have free alternatives that come from either the commercial or open-source arenas.

There's no point in substituting existing software for a free alternative, but if you need to buy new, consider some free options. The most obvious contender is Open Office instead of Microsoft Office. It's available free from www.openoffice.org and has replacements for Word, Excel and Powerpoint that produce compatible files. For professional-quality

graphics programs, try Paint.net (www.getpaint.net) or the Gimp (www.gimp.org). Kompozer (www.kompozer.net) provides a simple web editor. Free desktop publishing comes in the form of Scribus (www.scribus.net).

If you have more specialised needs, consider running a search at Sourceforge (www.sourceforge.net), or simply browsing the contents of this issue's cover disc – you may be surprised at the wide range of freeware programs on offer. **PCW**

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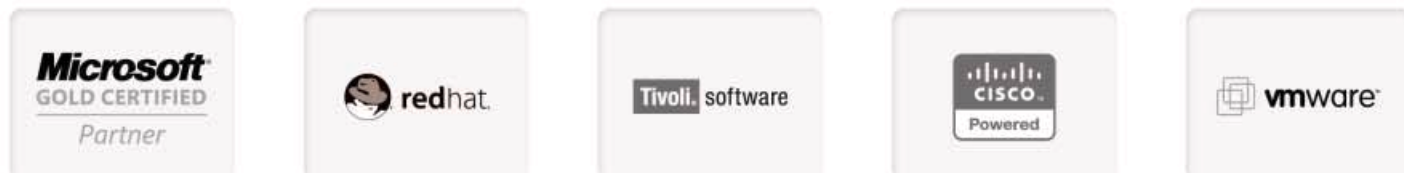
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HOSTING

Max out your Mac Mini

Got an out-of-date Mac Mini? Don't let it go to waste – turn it into a streaming audio server instead, says Chris Wiles

Although most *PCW* readers are good at eking out the lifespan of their PCs, there eventually comes a time when you must admit defeat, regardless of how careful you are to keep the hardware up to date with judicious upgrades. As we've discussed elsewhere in this issue (see the feature on page 51), re-using old PCs is something well worth investigating before you go down the route of passing them on to family or friends, or simply junking it.

As an example, an old PC could run a Linux-based web or email server – if you have a fast broadband connection with a static IP address (or use a dynamic DNS service like www.dyndns.org), you need little more than a domain name. Alternatively, install an FTP server, such as the free zFTP Server (www.zftpserver.com), to allow other users to download files from your home, or Smoothwall Firewall (www.smoothwall.org) to



use the PC as a hardware-based firewall, protecting your home network.

However, in this short feature we're going to show you how to use an old Mac Mini as a streaming audio server that can stream music to any hi-fi system in your home, all controlled remotely via an iPod, iPhone or even a smartphone.

Storing your media in one location makes sense. With digital rights management, you can't simply copy your downloaded audio tracks across various computers, unless you make sure each one contains your login information. Using iTunes as an example, you can store your audio on up to five computers, but you need your iTunes Music Store login on each machine – not good if you want to share your audio with other people in your home.

By keeping your media files in one location, you can control the content and make sure each room is capable of hearing the same audio track streamed from the one source. This means you can set up your media server to stream the same track to your kitchen, bedroom and even your garden. If you plan on listening to music while you clean the house, you can hear the same audio stream simultaneously, wherever you're located. If you work from home, using a laptop, you can move around and work in different locations without having to move your sound source with you.

If you play your audio from your laptop,

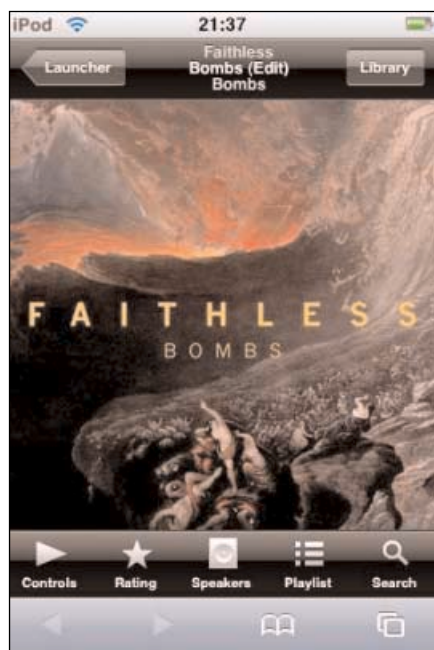
especially if you prefer to keep it in high-quality or uncompressed formats, you may well find yourself using lots of valuable disk space. For this reason, move your audio from the laptop and keep your hard disk contents for your work and important files.

Best of all, if you use a central server for your multimedia content, you can even get away with not connecting a monitor, keyboard or mouse to the server, except when you need to access it for troubleshooting.

What's required

For our example, we're using an original Mac Mini. We know of a few people who were initially hooked on the Apple bug when they saw the Mac Mini, but then realised it was no gaming computer, it shipped with a laptop hard disk and was just too slow for most users. As it was a fairly low-cost system, it ended up in the back of the wardrobe with other components. Try and sell it and you'll be lucky if you get a buyer – no-one these days seems to want a Power PC-based Mac Mini with 512KB of Ram.

All is not lost, however. The OS X-based Mac Mini can be used as your audio server. If you're an iTunes user, you need nothing more than iTunes – the Windows or Mac version will do – configured to share your audio tracks. If you don't own a Mac Mini, take a look at Apple UK's refurbished store. You may be lucky and find a discounted Intel Mac Mini that will enable you to run Mac OS X and Windows on the same machine. We noticed a 1.8GHz example recently, discounted to £299, making it ideal for your home media server. Otherwise, have a look



View the track listing and cover art, as well as control speakers using your iPod Touch

on Ebay – good clean examples seem to cost around the £150 to £200 mark.

The reason we recommend a Mac Mini is that it's extremely quiet, has a low power consumption and doesn't easily overheat, so it can be left turned on most of the time without worrying too much.

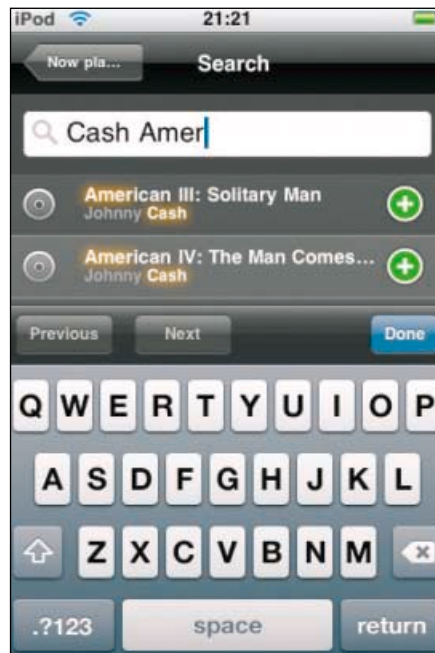
Next, buy an Apple Airport Express wireless adapter (£65) for each audio system in your home. For example, if you have a hi-fi in your sitting room and bedroom, you'll need two Airport Express devices. You can even connect one to your TV via a simple 3.5mm jack-to-phono connector. If you're lucky enough to own an audio system with a digital (S/PDIF) input, the Airport Express connects directly to this. However, streaming to a mixture of digital and analogue connections could result in a delay to the audio through different devices – the digital link may stream behind the analogue track.

Controlling your media server

Now you need a remote control. If you own an iPhone or iPod Touch, you can use this to control the tracks streamed from your media server. If you own the latest iPhone 3G with v2.0 software, Apple has a free application in the App Store called Remote, which you can download and use to control your iTunes-based server. You can also buy an iPod Touch 8GB from the Apple Refurbished store (£135, rather than £199) and this should ship with v2.0 software installed as default.

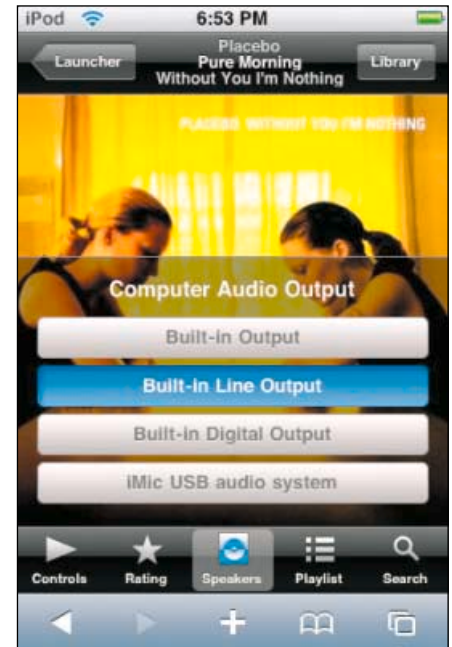
If you have an older iPod Touch, all is not lost. Although you can't access the App Store unless you upgrade your iPod Touch software, there are other third-party products that offer similar functionality to the Apple Remote and much more. Remote Buddy (€19.99 – around £15.70, www.iospirit.com) is a comprehensive application that will, among other things, turn your iPod Touch into a device that will enable you to control iTunes. It can also control other Mac software such as Keynote, allowing you to control a presentation from your iPod Touch.

Remote Buddy also enables you to control your iTunes-based audio from alternative remote controllers, including Apple's own remote for the Mac Mini. If you own a Playstation 3 and the Sony BD remote control, you can use this Bluetooth-based device for basic control of your iTunes media files – as it doesn't have a visual interface, you're limited to the basic transport keys



Left: Use your iPhone to quickly search and find your favourite tracks

Below: Remote Buddy lets you choose which audio output from the Mac Mini to use



(start, stop, skip and so on). Some infra-red remotes are also supported, but you'd need to add an infra-red receiver to the Mac Mini – see the Remote Buddy website for more details. There's also a list of supported Sony Ericsson mobile phones.

When using Apple Remote or Remote Buddy on an iPod Touch or iPhone, you can see details of your iTunes audio files. Simply search for the audio tracks or select an album, add it to your playlist, choose which Airport Express devices you want to stream your audio to, then sit back and listen to your music.

This isn't limited to your home. There's no reason you couldn't use this kind of setup in an office, small hotel or other multi-room area. Build your audio media server, set up the Airport Express devices where you want to stream the same audio track to, then manage them with your remote.



Streaming video

In theory, there's nothing stopping you streaming video files as well. However, there's one difference – with video streaming, the bandwidth and processing required is much greater. Even 802.11n isn't really fast enough to stream HD video from your media server to your TV. The Mac Mini's 802.11g Wifi isn't really suitable for handling multiple video streams.

We've dealt with multimedia streaming several times in PCW over the past couple of years, and you can read the relevant

articles for free online at www.pcw.co.uk. Most recently, Gordon Laing's Hands On Hardware column looked at the issues surrounding video streaming – see for the full story. Also take a look at how to build a Windows-based home media server at www.pcw.co.uk/2173826.

Due to its hardware limitations, it's not really practical to use your Mac Mini as a streaming video server, although it's fine if you want to connect it via cable to a single TV. In this case, take a look at software such as Elgato's Eye Connect (\$49.95 – around £26, www.elgato.com), which will enable you to watch your EyeTV recordings on your TV, play and view your digital photos from your iPhone library (part of OS X) and watch any video from your video folder. Any video format supported by Quicktime will be playable through your TV.

Remember if you're using an Intel-based Mac Mini running OS X Leopard and prefer to have Windows installed, you'll need alternative server software. There are various PC media servers you can use to play back video, including Twonky Media (€29.95, www.twonkyvision.de) and Tversity (Free, <http://tversity.com>), which will also enable you to push your media to portable devices, including your iPhone or Blackberry. If you want a cross-platform UPnP media server, take a look at Fuppes (Free, <http://fuppes.ulrich-voelkel.de>). PCW



An old Apple Mac Mini running OS X will make an ideal home media server



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CREATED EQUAL**



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AN EEE TOO FAR?

When Asus launched its first Eee PC last year, it took the market by storm and prompted a host of copycat devices. Now the company is attempting to do the same to desktop PCs with its new Eee Box. Small, stylish and designed to sit upright, it certainly looks impressive. But, after giving one a thorough testing in our labs, we doubt the Eee Box will experience the same success as the Eee PC notebooks. Despite its low price, you wouldn't have to spend much more to get a far more powerful desktop PC. And if it's portability you're after, the Aspire One notebook from Acer offers the same amount of power in a handy pocket-sized chassis that, of course, comes with a built-in screen. We do, however, like the way it can be attached to the back of a flat-screen monitor via the included Vesa mount. Read the full review on page 62.

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OUR SCORING

Excellent ★★★★★ Very good ★★★★☆ Good ★★★☆☆ Below average ★★☆☆☆ Poor ★☆☆☆☆

OUR AWARDS

Editor's Choice: The best product in a comparative group test. Anything that wins this award is of better quality than its competitors.

Recommended: A product that combines great features, usability and value for money.

Great Value: Not the best in class, but a product that has superior features and performance for the price.

Best Buy: The best product in its class in terms of performance, features and value for money



REVIEWS



'Its design might not suit all tastes, but Samsung has done a good job of implementing Intel's latest mobile chipset'

Read the review on page 63

DESKTOP PC

Asus Eee Box B202

Intel's Atom processor in a desktop case

It's fair to say that Asus' Eee 701 marked a turning point in the evolution of notebook computers, proving that many people are happy to sacrifice speed for a computer that's inexpensive and convenient. Since then, most companies, including Asus, have started building so-called netbooks around Intel's low-cost Atom processor and, with the Eee Box, Asus has used the same technology to build a desktop PC.

The Eee Box measures just 222x27x178mm and, like the Eee notebooks, includes no optical disc drive. At the front of the case are two USB ports, a memory card reader and two audio jacks, all hidden behind a plastic flap. The rear holds two more USB ports, a DVI output, another audio output, which doubles as a digital S/PDIF, Gigabit Ethernet and a socket for the included Wifi antenna. The case feels reasonably sturdy, but the flap on the front panel is disappointingly flimsy, especially given that it must be opened every time you need to use the Power button.

The Eee Box is currently available only with Windows XP Home, rather than the Linux operating system installed on some Eee notebooks. However, you can still surf the web without waiting for Windows to boot up. When started, the Eee Box displays the 'Eee Box Express Gate' menu with five options – web, photo, chat, Skype and Enter OS. The first four give access to a simplified Linux desktop that includes a web browser and the Pidgin instant messaging client.

Sadly, though, this Linux interface is nowhere near as polished as the one used on the Eee notebooks and we're not sure the casual PC users the Eee Box is targeted at would find it immediately obvious how to start Windows. Fortunately, the entire system can be disabled using the Bios.

Once in Windows, the Eee Box runs surprisingly well. The Atom N270 processor isn't particularly powerful, but together with 1GB of memory and an 80GB hard disk, Windows XP runs snappily. Browsing the web or creating documents is no problem, although with an overall score of just 1,499 in PCmark05, we wouldn't want to use the Eee Box for demanding tasks such as video recording. It's little surprise then that the system is completely unsuited to running modern 3D games, although it plays 720p high-definition video without problems.



The Asus Eee Box performs simple tasks well enough, but isn't very powerful

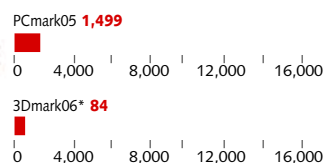
The Eee doesn't include a keyboard or mouse, and you'll also need a monitor for it. Add on £150 for a decent 19in LCD, and you're approaching the price of Mesh's Elite IQ 2180 (www.pcw.co.uk/2222803), which is far more powerful both in Windows tasks and games. However, the Eee Box is tiny and impressively quiet; there is a fan inside, but stick the box under your desk and you'll barely notice it.

Another key strength of the Eee Box is hidden at the bottom of the packaging: as well as a desktop stand, Asus has included a Vesa mount in the box. Armed with this and four screws, which aren't included, you can attach the Eee Box neatly on to the back of most LCD monitors.

The Eee Box isn't perfect, but it performs simple tasks well enough and is impressively small and quiet. Asus says the SRP is £199, however the cheapest we could find it for was £220 from Play.com. And this is perhaps its main problem, since notebooks such as the Acer Aspire One offer the same kind of power in a handy portable case – at the same price. If you want a low-cost desktop PC for web surfing, the Eee Box will do the trick, but most users would be better suited by either a standard desktop PC or an Atom-based notebook.

Tom Royal

Performance



*Tested at 1,024 x 768 in 32-bit colour

Verdict

Pros Quiet; small; Vesa mount included

Cons Limited power; Linux quickboot system is unimpressive

Overall Small and quiet, but looks like poor value compared to similarly specified notebooks

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £220

Contact Asus <http://uk.asus.com>

Specifications Intel Atom N270 (1.6GHz) • 1GB DDR2 Ram (400MHz) • 80GB hard disk • Intel GMA950 integrated graphics • 802.11n Wifi • Gigabit Lan 222x27x178mm (wxdxh) • 3kg • Two-year warranty

NOTEBOOK PC

Samsung Q210

Intel's Centrino 2 processor in a chassis that divides opinion



BEST BUY



RECOMMENDED



The red stripe on the Q210 doesn't have universal appeal

Intel's latest mobile platform, Centrino 2 (codenamed Montevina), brings a whole new line-up of processors, a completely new chipset providing improved graphics, better Wifi handling and enhanced power management. The first notebook to land on our lab bench using the new technology is Samsung's replacement for the Q45, namely the Q210.

From the outside the Q210 looks like any other Samsung with its glossy black finish, but opening the lid tends to divide opinion. The Q210 has a touch of red along the front edge of the chassis – although this makes it stand out from the crowd, the jury is very much out on whether it improves its looks. Arguments about finish aside, the Q210 has excellent build quality, which belies its 2.25kg (with power adapter) weight.

Powered by an Intel Core 2 Duo T8400, one of the new CPUs that are part of the Centrino 2 platform, the T8400 has a clock speed of 2.26GHz, a 1,066MHz front-side bus, 3MB of L2 cache and a TDP (Thermal Design Power) of just 25W. Backing up the processor is the new Intel PM45 Express chipset and 3GB of PC2-5300 667MHz DDR2 memory. This gives the Q210 a reasonable overall PCmark05 score of 5,462, while the more intensive PCmark Vantage returned an overall score of 3,474.

Don't expect the graphics to power anything more than casual gaming, though, as the Nvidia GeForce 9200M GS with 256MB of dedicated memory isn't about to set the world alight. This is something amply proved by its 3Dmark06 score of just 2,368 – if that doesn't convince you, the average frame rate score of just 4fps (frames per second) in World in Conflict should.

However, the screen is very good. With a native

resolution of 1,280x800, the 12.1in display comes with a glossy, high-contrast coating which doesn't reflect office lighting as badly as some others we've seen.

The keyboard exhibits the same build quality as the rest of the notebook with no discernable flex during use; this results in a strange key response feeling when you type, but we soon got used to it.

All the ports are labelled on the top edge of the chassis and, unlike many of the competition's systems, the labels are positioned above the appropriate port. The left-hand side of the chassis holds VGA and HDMI ports, a single USB port and two audio ports. The eight-speed DVD burner sits on the right-hand side, together with two more USB ports, an SD card slot and a 34mm Express Card slot. Samsung has provided the Q210 with a 320GB 5,400rpm Sata drive for storage, which should be more than adequate for day-to-day use.

The Q210 is well equipped for keeping in touch with the office or surfing the web. There is Gigabit Ethernet and 802.11n Wifi; along with a 56K modem. Last but not least is Bluetooth 2.0 +EDR to get you connected to devices such as mobile phones.

When it comes to battery life, the Q210 offers some pretty decent results with its six-cell 5,200mAh battery. In Mobilemark 2007 it lasted for just a shade over three-and-a-half hours in the Productivity test, while the DVD test yielded a life of just over two-and-a-half hours. By using the power-saving features, you could boost this even further.

Its design might not suit all tastes, but Samsung has done a good job of implementing Intel's latest mobile chipset. And if games aren't your bag, it's a great workhorse laptop.

Simon Crisp

Performance

PCmark05 **5,462**



3Dmark06* **2,368**



*Tested at 1,024 x 768 in 32-bit colour

Verdict

Pros Decent CPU performance; good battery life

Cons Poor gaming performance; styling may not suit everyone

Overall It won't suit all tastes or gamers, but this Centrino 2 notebook has a good mix of CPU performance and battery life

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £675.98

Contact Samsung 0845 726 7864
www.samsung.com/uk

Specifications Intel Core 2 Duo T8400 2.26GHz • Intel PM45 Express chipset • 3GB 667MHz DDR2 memory • 12.1in screen • 256MB Nvidia GeForce 9200M GS • 320GB 5,400rpm hard drive • 304x226x36.7mm (wxdxh) • 1.95kg (excluding power adapter) • One-year warranty

NOTEBOOK PC

Dell Studio 17 NR73502

Well built with a speedy processor, but not a laptop for gamers

The Studio family line-up comes in a choice of eight colours and four trim options



There has always been a gap between Dell's popular mainstream Inspiron notebook series and its higher end XPS models. Now it has bridged this gap with the Studio family, incorporating features found in both product lines. The Studio line-up features 15in and, as on this Studio 17 sample, 17in versions.

These days, choosing a notebook finish is almost as complicated as choosing the paint scheme and interior finish of a new car. The Studio family comes with a choice of eight colours, including the Graphite Grey of our review model; you also get a choice of four trim colour options.

Depending on your point of view, the pattern on the chassis either looks like a series of water stains or the contour lines on a map. Still, the finish is impressive, but whether you'll want to carry it around showing it off to people is another matter, as it weighs a hefty 4.1kg with the power supply.

As with all Dells, you can customise the specification to suit your needs. Our sample came with an Intel Core 2 Duo T8300 processor (there are two other options both with 6MB of L2 cache, namely the 2.5GHz T9300 at £79.99 extra and the 2.6GHz T9500 at a whopping £270 extra). The T8300 is clocked at 2.4GHz and, with an 800MHz front-side bus (FSB) and 3MB of L2 cache backed by 4GB of 667MHz DDR2 memory, it has plenty of power to do all the everyday tasks you'll ask of it, as confirmed by its PCmark05 score of 6,014. It also scored a respectable 3,546 in the more demanding PCmark Vantage.

A single 320GB 5,400rpm Western Digital Scorpio hard disk is fitted along with an eight-speed slot-loading DVD burner. Powering the graphics is ATI's Mobility Radeon HD3650 with 256MB of dedicated

DDR2 memory clocked at 500MHz, which provides a modicum of games performance. When tested using the built-in benchmark in World in Conflict at the screen's native resolution (1,440x900), it only gave a maximum frame rate of 16fps (frames per second); this was tested with all the details turned on or set to high. Turning some of these off and dropping the resolution will give better frame rates, but it's no gaming system.

The 17in screen features Dell's Truelife coating and is very impressive, and to output to other screens there are VGA and HDMI ports. Although it comes with an Intel CPU and chipset, this isn't a Centrino notebook as the wireless networking isn't an Intel product – instead, it's one of Dell's own 802.11n 1510 mini cards; the Bluetooth module is also a Dell product.

The keyboard feels sturdy, with hardly any flex to the key bed, while the keys themselves are good and responsive. It also has a dedicated numeric keypad. Compared to the keyboard, the touchpad seems undersized, but again it has just the right amount of sensitivity. Above the keyboard is a row of touch-sensitive controls and a Media Center remote control.

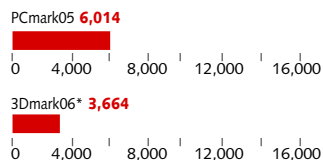
A notebook of this size isn't going to be carried about too much, so we weren't expecting wonders in our battery tests. But when tested with Mobilemark 2007, the standard six-cell battery lasted 125 minutes for the DVD test, 158 minutes for the Productivity test and 178 minutes for the Reader test.

Microsoft Works 9 is included along with Vista Home Premium, and a one-year RTB warranty is provided as standard.

It's not much good for gaming and its weight will put some people off, but the Studio 17 is well built and benefits from a decent processor.

Simon Crisp

Performance



*Tested at 1,024 x 768 in 32-bit colour

Verdict

Pros Good build quality; decent processor performance

Cons Heavy; not suited to gaming

Overall Gaming performance isn't great, but otherwise this is a well-designed and solidly built notebook

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £799 (Dell E-Value code: NPUK5-NR73502)

Contact Dell 0844 444 5818

www.dell.co.uk

Specifications Intel Core 2 Duo T8300 (2.4GHz) • 4GB PC2-5300 667MHz DDR2 Ram • 17in display (1,440x900) • 256MB ATI Mobility Radeon HD3650 graphics • 320GB hard disk • 802.11n • Bluetooth • Microsoft Works 9 • Vista Home Premium • 4.1kg • 39x29x3.9cm • One-year RTB warranty

MEDIA STREAMER/PLAYER

Plextor PX-MX500L

HD streaming, but it's up against some stiff competition

As we saw in our recent group test (PCW October 2008), media streamers have come a long way over the past couple of years. Previously the sole domain of enthusiasts, usability has greatly improved and they're now appealing to the mass market.

Although Plextor's PX-MX500L can stream media over your network, it also houses a hard drive, which means you can store all your content directly on the device and avoid the problems associated with streaming. The built-in storage also means it can hook up to a TV source to record programmes.

At the rear, component, composite and Scart outputs are joined by HDMI, while two USB sockets let you hook up memory sticks or external hard drives. There's also a B-type USB socket, allowing you to attach your PC or notebook and transfer movies, music and photos directly. A fan sits alongside these connections, but it's quiet and you're unlikely to notice it during use.

A big disappointment is that there's no built-in Wifi, leaving you to either hook it up to your router via an Ethernet cable or use some form of powerline networking. It's a shame because, although wireless isn't perfect for all types of media streaming, most 802.11g networks are capable of providing the throughput required by standard DivX movies and, most certainly, audio files.

Installation is relatively simple, although you are asked to format the drive during the process. The hard drive is divided into two sections: one for recording, the other for general multimedia file storage. These sections are further split, allowing you to specify how much space you want reserved for media files, recorded TV etc. It's an unusual setup procedure and one we've not seen on any other media players, but thankfully there's an Auto format option for those who simply want to start using the device.

Unlike most media streamers, which either use the sharing function of Windows Media Player or their own software when streaming content over a network, the PX-MX500L uses standard Windows folder sharing. The advantage is that it's very easy to set up since all you need to do is share those folders you want the device to be able to access. However, it also means the device will list all the other shared folders on your PC, which may or may not contain media files.

Once up and running, navigating around the menus is tiresome, not least because you're left to trawl your way through directory structures. It's also pretty sluggish, especially when viewing a folder full of videos, since it will attempt to run a preview each time you move down the list. It's faster when accessing



Not just a hobby: media streamers such as Plextor's PX-MX500L are now appealing to the mass market

contents stored locally but still not ideal. And with no scroll feature, if you're in a folder full of files you'll find yourself becoming extremely frustrated at how long it takes to browse.

On the plus side, the device lets you copy content between the network, internal hard drive and any attached external drives. However, with no progress bar you're left guessing how long each transfer will actually take.

Thanks to its built-in hard drive, the PX-MX500L can also record or time-shift live TV. But its lack of electronic programme guide (EPG) means there's no option to schedule recordings, with the unfortunate result that you have to manually press the Rec button whenever you want it to record. If you have a camcorder, you can import video directly to the device and perform basic editing.

As far as quality of images goes, we've got no complaints. Standard-definition video looks good, and if you've got any HD content the PX-MX500L will do it justice; it's worth noting, however, that it can't play 1080p content, nor can it handle WMV files, HD or otherwise. Audio is of a similarly high standard, and the analogue and digital (optical and coaxial) outputs mean you shouldn't have any trouble hooking it up to a surround-sound system. However, you can't set up playlists or even activate a shuffle mode, which is very disappointing.

The PX-MX500L has its plus points, such as the large hard drive and decent HD playback, but we were disappointed with the usability and limited nature of some of the other features (not least its inability to schedule recordings). Firmware updates may sort some of the issues, but if you're after a media streamer with a built-in hard drive the Archos TV+ (www.pcw.co.uk/2210545) comes highly recommended – it might not have HD support, but it completely eclipses the PX-MX500L in terms of features and usability.

Will Stapley

Verdict

Pros Plays HD video; large hard drive
Cons Lacks wireless; no scheduled recording; no online features; poor interface

Overall Despite its large hard drive and HD capabilities, this is ultimately a disappointing media streamer

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price £239

Contact Plextor

www.plextor-europe.com

Specifications 3.5in 500GB Sata hard drive • 3 USB ports • DV-in • Component, composite, Scart and HDMI outputs • Scart and composite inputs • Analogue and digital (optical/coaxial) audio • Video support: MPEG-1/2/4 up to 1080i • Audio support: AC3, WMA, WAV, MP3 • Image support: JPG, BMP • 200x148x63mm (wxdxh)



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Integrated Wireless 802.11G Network Card
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MULTIFUNCTION DEVICE

Brother MFC-6490CW

Print, scan and fax A3 documents



If the A4 multifunction devices (MFDs) in our group test this month (see page 108) don't quite do it for you, the MFC-6490CW is an A3 alternative. According to Brother, it's the world's first compact A3 wireless inkjet MFD.

With its 540x488mm footprint, calling it compact is stretching it a bit, but Brother has done a good job of keeping it as small as possible; it's worth noting that if you load it with A3 paper, the paper tray will jut out from the front. A host of buttons on the front ensure it's easy to scan and send faxes. There's also a 3.3in widescreen colour display that makes printing from memory cards much easier, and all major cards are supported.

Installation was simple, although the chassis does feel a little flimsy in places, especially when it comes to adjusting the input tray's paper guides. Ink cartridges are loaded into the front of the printer and, as is common with Brother devices, the USB socket is under the scanning unit, so you have to open the lid and trail the USB cable (not included) inside the device. We're not sure why Brother thinks this is such a good idea – in our view, it means you need a longer USB cable. However, with wireless and wired networking included, there's little need to have it physically attached to your PC.

A 50-sheet auto document feeder (ADF) sits on top of the scanner, allowing for hassle-free, multi-page scanning or copying. However, we were slightly disappointed Brother didn't find room for a duplex unit. Two paper trays provide ample storage; the top one is good for 150 sheets, while the bottom can hold 250.

We had no qualms about the quality of text printouts and it's hard to tell them apart from those

produced by a laser printer. Scans are similarly impressive with strong, accurate colours. Although not intended as a high-end photo printer, we were pleased with the photos produced by the MFC-6490CW. In testing, it produced some A3 photos that looked great when viewed from a reasonable distance, although get up close and you'll notice lost detail.

It's not the fastest printer around, taking just over two minutes to churn out 10 pages of text, and five minutes, 45 seconds for a colour A4 photo. But if you stick to draft mode, you'll get closer to the quoted 33ppm (pages per minute).

Brother has resisted the temptation to supply the device with low-capacity cartridges, instead shipping standard versions. Replacements cost £16.44 for the black and £8.80 for the three colour cartridges, lasting 450 pages (3.7p per page) and 325 pages (2.7p per page) respectively. High-capacity versions cost £22.31 (black) and £12.33 (colour), and last for 900 pages (2.5p per page) and 750 pages (1.6p per page) respectively.

At more than £249.99, this MFD is reasonably priced when you consider you're getting an ADF, print/copy/scan functions and decent A3 printing. If you don't think you'll make full use of its A3 capabilities, look elsewhere and save yourself some cash, but for the home office, it has a lot to offer.

If you're not interested in faxing, it's worth taking a look at Brother's identically priced DCP-6690CW, which is essentially the same printer, but it substitutes a touchscreen LCD panel for the fax.

Parts of the chassis could do with being more rugged and we'd like to see duplex printing on a device such as this, but on the whole the MFC-6490CW is a decent effort from Brother.

Will Stapley

Verdict

Pros Good-quality prints; accepts A3 paper; easy to install; wired and wireless networking

Cons No duplex function; slightly flimsy chassis

Overall If you'll make good use of its A3 functions, this is a good-quality multifunction device

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price £249.99

Contact Brother 0870 830 4000
www.brother.co.uk

Specifications Inkjet MFD • 6,000x1,200dpi printing • 1,200x2400ppi scanner • 33,600bps fax • 33ppm mono • 28ppm colour • USB2 • 10/100 Ethernet • 802.11g • 64MB memory • Multiformat card reader • 540x488x323mm (wxdxh) • 15.6kg • One-year, on-site warranty

SMARTPHONE

Nokia E71

Well-designed handset for consumers and business users alike



The E71 is more pocket-friendly than the iPhone

With all the hype surrounding the launch of Apple's new 3G iPhone, it would be easy to forget that mobile phones with two of its new features – 3G internet access and support for Exchange email – have been around for ages. Nokia's E61, for example, appeared in 2006 and was a fantastic phone for business users, but with no camera and a rather boxy design it wasn't going to win over many consumers. With the new E71, Nokia has clearly tried to widen the appeal of its business smartphones.

For starters, the E71 is more pocket-friendly. It measures just 57mm wide and 114mm tall, making it slightly smaller than the iPhone 3G. Despite this reduction in size, the front still holds a full Qwerty keyboard with keys that are each 5mm wide. Although packed closely together, they are cleverly shaped and anyone who learned to thumb-type on a Treo, BlackBerry or Nokia handset will have no problem using this one.

There's also an unusual mode option that changes between two completely different home screens: one for work, and one for personal use. We're not entirely sure that this is necessary, but it works well enough.

The E71's 3.2-megapixel camera has a higher resolution than the iPhone's two-megapixel sensor and, unlike Apple, Nokia has included a flash and autofocus. It's better suited to picture messages, which aren't supported on the iPhone, than to large prints, but with very little shutter lag it's good enough for snapshots.

Of course, for many smartphone users access to the web is far more important than taking photos. The E61 can connect via Edge, 3G, HSDPA or 802.11b/g Wifi, so fast internet access is usually available. Connecting to Wifi networks on older Nokia handsets was a pain, but on the E71 it's a cinch: choose a network, enter the

passkey and you're browsing. The web browser itself has to make do with a far smaller screen than that of the iPhone, but websites are rendered neatly.

Nokia has produced several previous phones with GPS built in, but it hasn't always been easy to use. With the E71 we downloaded the Google Maps application, and within a few seconds its assisted-GPS pinpointed our location and plotted out a street plan around us. Nokia's own Maps application is pre-installed, too, and can be upgraded to a full driving GPS with voice prompts if you wish.

Although the GPS, camera and web browser work well enough, the E71 is clearly designed for email and it does this very well. Pop3, Imap4 and Exchange accounts can be set up, and the keyboard is designed for email: there's a button to access your inbox, for example, and another to add an '@' symbol with one click. The Quickoffice software makes it easy to open a Word or Excel document attached to an email, and there's also an option to read emails aloud that works surprisingly well. There's only one caveat: Nokia does not provide a BlackBerry Connect tool for this handset.

Nokia claims that the E71's battery will last for up to 17 days in standby. In our rather more demanding tests, checking email regularly and surfing the web, it ran for seven days before needing a charge.

All in all, it's hard not to be impressed with the E71. It's a great tool for email, provides all the bells and whistles anyone could expect from a modern smartphone, comes with a great battery, and from around £300 contract-free it's good value. Music-loving design fans should stick to Apple's touchscreen marvel, but everyone else should put this handset at the top of their smartphone shopping list.

Tom Royal

Verdict

Pros Small; full Qwerty keypad; fantastic for email; good battery life

Cons Relatively small screen; no BlackBerry Connect support

Overall The best smartphone for email, and a great phone for both businesses and consumers

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price From free, depending on contract

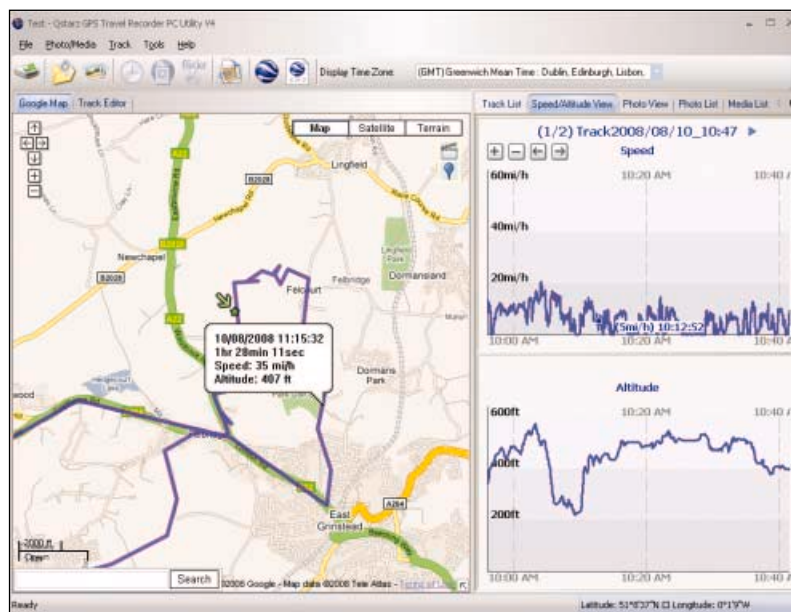
Contact Nokia www.nokia.co.uk

Specifications 320x240 pixel display • 110MB internal memory • MicroSD slot (up to 8GB) • GSM/Edge/3G/HSDPA • 802.11b/g • 3.2-megapixel camera with LED flash • Assisted GPS • 57x10x114mm (wxdxh) • 127g

GPS LOGGER

Qstarz BT-Q1300

Find out where you've been and how far you've travelled



The BT-Q1300 is the perfect companion for those who love the outdoors



If you're fond of country walks, bike rides or other outdoor pursuits, you've probably also got an interest in plotting exactly how far you've travelled. A GPS logger, such as the Qstarz BT-Q1300 keeps tabs on where you've been, how fast you were travelling and even what altitude you were at.

Small and compact, the BT-Q1300 looks much like an ordinary key fob, complete with a keyring attachment. And, at just 21g, it won't weigh you down on long walks. There's just a single button on the device, which is joined by a standard mini-USB port and four LED indicators – one each for power, GPS activity, logging and Bluetooth.

The unit is charged via USB (an in-car adapter is included) and will last for up to 12 hours' continuous use. Holding the button down for four seconds turns it on, while holding for two seconds starts the logging; tap the button and it will mark your current location as a waypoint.

We took the BT-Q1300 out on a variety of routes and, thanks to its uncomplicated nature, it caused no problems; the log icon flashes reassuringly each time a log point is created. Built-in Bluetooth means you can also use the BT-Q1300 as a GPS receiver for your mobile phone. We tested it with a Nokia E51 and, using Google Maps, were soon able to pinpoint our location.

When you return from a trip, simply hook up the BT-Q1300 to your PC via USB, click the Read GPS Log option in the software and the data will download. You can then view your trip within the software using Google Maps or export it to Google Earth. Hovering your mouse over the log trail brings up the date, time, speed and other information recorded at that particular point. Speed and altitude graphs are also available.

According to Qstarz, this is the first GPS receiver to use the MTK 3329 GPS chipset, which offers greater sensitivity. When we tested it in rural locations, accuracy was indeed very good. It wasn't quite so accurate in central London, though – the high-rise buildings hampered GPS performance, resulting in the logged trail indicating we'd occasionally been walking around in circles and even through several buildings. It wasn't far off track, but when the signal gets confused, details such as altitude and speed can go awry. Using the software, you can make adjustments to your trails.

Rather confusingly, versions 3 and 4 of the Travel Recorder software are included. Version 4 has a much clearer interface and is easier to use, although there are more advanced options to play with in version 3; it's something of a surprise that Qstarz didn't just add an 'advanced options' section to version 4.

Using the software, you can adjust settings, such as how frequently data logs occur – this can be a time interval (for example, every five seconds) or a specific distance (every 10m) – as well as specify a minimum speed at which logs should occur.

We suffered a couple of crashes using the software, but in the main it worked fine. A new software release is imminent, which will include an assisted-GPS (A-GPS) feature to decrease the time to first fix. This will be freely available on the company's website.

GPS data loggers will always be something of a niche market, but we were impressed with this effort from Qstarz. Although the software could do with some tweaks and the occasional crashes were annoying, the BT-Q1300 is loaded with features, very compact and would be the perfect addition to any outdoor enthusiast's rucksack.

Will Stapley

Verdict

Pros Compact and light; accurate logging; easy-to-use hardware

Cons Software can be confusing at times; occasional software crashes

Overall A terrific companion for those who enjoy outdoor pursuits

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £64.99

Contact Super GPS 0870 443 8446
www.supergps.co.uk

Specifications MTK 3329 chipset • Sensitivity: -165dBm • 66-channel tracking • 4MB built-in memory • Maximum 200,000 logs • Up to 12 hours' battery life • USB • 38x62x7mm (wxdxh) • 21g

SAT NAV

Navman S30 3D

Satellite navigation with 3D landmarks and a bargain price



The S30 3D is the low-end model in Navman's latest satellite navigation line-up and, as indicated by its name, features 3D landmarks. It comes with maps of the UK and Ireland preinstalled, but omits the European coverage and Bluetooth connectivity found in more expensive models.

It's a compact device with a 3.5in screen, but due to its rather large black and grey bezel, isn't particularly attractive. The exterior features an SD card slot for loading additional maps and a simple on/off switch, with the rest of the controls appearing on the touch-sensitive display during operation.

This reliance on touchscreen controls isn't too much of a problem, though; despite the relatively small screen, the buttons are large and easy to operate. Important features such as volume control and route information are available directly from the main map. The 3D landmark feature shouldn't really swing any decisions to buy, though, since it's confined to main UK cities and the usefulness of the images is questionable.

Planning a route is straightforward thanks to vocal prompts that confirm the letters or numbers you press as you're entering an address.

Routes are calculated quickly and the map view and directions are clear and easy to follow. An icon at the top left of the screen confirms the distance to and nature of the next turn-off, while shortcut buttons offer access to the trip computer, zoom controls and 2D/3D views. There's a good degree of control over points of interest (Pols), along with one-touch access to local garages, medical facilities and parking. There's no media playback and, although a safety camera database comes preloaded, you'll need to pick up an antenna separately if you want traffic information on the move.

The S30 is a fairly basic device, but its sheer usability makes up for this. *Paul Lester*

Verdict

Pros Clear navigation; easy to use
Cons Lack of extras; 3D landmarks a bit of a gimmick

Overall If you're primarily looking to get from A to B and aren't bothered about additional functionality, then the S30 will suit

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price £99.99

Contact Navman 01293 566 100
www.navman.com

Specifications 3.5in touchscreen display (320x240) • 512MB internal memory • SD card slot • UK and Ireland mapping • 3.5 hours battery life (maximum) • 83x109x19mm (wxdxh) • 145g

NETWORK STORAGE DEVICE

Digitus DN-7023

Cheap and compact way to add centralised storage to your network



With most homes having two or more computers, network storage is growing in popularity. The DN-7023 from Digitus is a compact unit that allows you to share any external hard disk or USB memory stick across your network.

Measuring just 33mm wide and 50mm long, the device has two sockets – a 10/100Mbps/sec port to link to your router and a USB2 port for your storage. It also requires its own power supply, so you'll need a spare mains socket near to your router.

The manual is almost as small as the device and, being both poorly translated and too brief, it's something that won't help networking newcomers. With no branding and a basic design, the web-based interface is similarly unwelcoming, but with few settings to tweak, network-savvy users will have no problems setting up. However, novices will have their work cut out since there's no Help section.

Once up and running, the DN-7023 works well. We attached a USB memory stick and an external hard disk without problems, but the device does get quite hot during use, so we'd recommend giving it plenty of breathing space. There's a built-in FTP server, allowing you to access it over the internet, but advanced features, such as Bittorrent downloads, are omitted.

There are routers on the market with built-in USB ports that essentially do the same job as the DN-7023, and if you're thinking of upgrading your router, we'd recommend opting for this method since you won't need a separate power supply. However, the DN-7023 would suit those who aren't planning on upgrading their router and don't want to splash out on a dedicated Nas (network-attached storage) device. It's just a shame Digitus didn't spend more time on the manual and interface. *Will Stapley*

Verdict

Pros Very small; works well; cheap
Cons Poor manual and interface; no Gigabit Lan; limited features

Overall A great device if you need basic and cheap network storage

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price £39

Contact Fairline 01622 716 688
www.fairline.co.uk

Specifications 10/100Mbps/sec Ethernet • USB2 • FTP server • External power supply • Supports Fat32 hard disks • 33x50x25mm (wxdxh)

HOMEPLUG ROUTER

Solwise NET-PL-200AV11NRT

802.11n wireless and Homeplug networking in one simple package



Powerline networking, of which there are various flavours including the popular Homeplug specification, uses your mains wiring as a hassle-free alternative to Ethernet or wireless. In order to set up such a network, you'll first need to attach a powerline adapter to your router. This is where Solwise's latest 802.11n router comes into play since it features a built-in Homeplug AV adapter. This means you need only buy Homeplug adapters for the devices on your network that require powerline networking.

There's no indication of the router's Homeplug capabilities in its web-based interface; Solwise instead includes a separate CD containing the Homeplug software. However, unless you want to change the default encryption this isn't really required.

You'll need to purchase a separate Homeplug AV adapter (Solwise's version is £52.87), and then it's just a case of plugging in the router, attaching the device to be networked to the Homeplug adapter, and then pushing the encryption buttons on both.

Unlike Zyxel's P-660HWP (www.pcw.co.uk/2210057), it worked a treat first time and provided a steady TCP throughput of just over 30Mbps/sec via Homeplug. However, as always, the performance you achieve will depend on the quality of your mains wiring.

You can pick up similar 802.11n routers for around £80, which means you're saving around £13 compared with buying a Homeplug AV adapter separately. However, the main advantage is that you won't need a spare mains socket next to your router since everything is built in to a single power adapter.

The router's only real drawback is that there's currently no ADSL modem version. Those who get their broadband via a BT phone line will have to buy an Ethernet modem, which isn't ideal. *Will Stapley*



Verdict

Pros Built-in Homeplug AV; 802.11n wireless; reasonably priced

Cons Separate router and Homeplug interfaces; no ADSL modem version at present

Overall If you're in need of a router upgrade and are planning to use Homeplug, this is the device for you

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £123.79

Contact Solwise 0845 458 4558
www.solwise.co.uk

Specifications 802.11n wireless router • Homeplug adapter built in • Four 10/100 Ethernet ports • Wan port • Wep, WPA and WPA2 • 200x125x30mm (wxdxh) • 260g

DIGITAL PHOTO FRAME

Varnam VM830BT

An 8in photo frame that doubles up as a video player



Digital photo frames are now common enough not to be interesting in themselves, so new models have to distinguish themselves with extra special features.

The Varnam VM830BT has an 8in (800x480) display, similar to most common frames and images appear quite sharp and clear on the screen.

There are six touch-sensitive buttons along the bottom for navigating the on-screen menus. While the buttons are very good and are more responsive than

those on most of the frames we've seen, the menus are quite ugly. They're not hard to use, though; you simply select a folder to view images.

As well as displaying pictures, the frame shows text files, video in various internet formats, and plays music through the built-in speaker or headphone socket.

Quality was impressive and more than up to the level of competing handheld DVD players, for example.

There's an output for a TV and cables are supplied, as well as two USB connectors; one attaches to a PC for loading images onto the 128MB memory, the other accepts USB memory keys. There are also sockets for all common memory cards.

The 128MB of memory is low, but if you crop the pictures first you can easily store over 100.

The frame's internal battery means it can be used away from the mains; it charges when the frame is plugged in and lasts an impressive two hours for video playback. That's handy for showing off your snaps to a group of people, but it also lends the frame a secondary use as a good video player.

It is rather expensive, but the high quality of the screen and the ability to play back video makes the Varnam a good choice for someone who wants more than a standard frame. *Anthony Dhanendran*

Verdict

Pros Good-quality display; built-in battery; good video playback

Cons Expensive; ugly menus

Overall A decent photo frame that doubles as a portable video player

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price: £130

Contact E-Bowl 020 8432 6423
www.e-bowl.co.uk

Specifications 8in (800x480) display • 128MB internal memory • 300:1 contrast ratio • Multifunction card reader • Image support: JPEG • Video support: MPEG-1/4 • Audio support: MP3 • Stereo speakers • 225x52x163 • 700g

OCR PEN

Dane-Elec Zpen

Translate your handwritten notes onto a PC using optical character recognition



The Zpen is designed to digitally convert your handwriting as you write. The kit comprises a pen and receiver unit; the former acts as a normal pen, the latter attaches to the top of a pad of paper. The two units communicate via infra-red, with the receiver monitoring the pen movement and saving it to the 1GB of storage supplied.

When you've finished writing, simply plug the receiver into a computer and use the preinstalled software to convert the handwriting to a traditional text file. The text can be organised into pages automatically using the receiver unit, which detects

when it's placed onto a new page. Everything you need is supplied in the package and the whole process is very effective. It's very easy to get started and we found that, provided the paper is orientated vertically and isn't any bigger than A4, everything we scribbled down was picked up accurately.

Using the optical character recognition (OCR) application isn't quite as flawless. As with all such packages, you will need to take care to write as legibly as possible to minimise errors. There's a learning mode in the package to improve recognition for individual handwriting styles by working through a series of tests. After using this we did find that things improved noticeably and, provided you're capable of writing neatly, you shouldn't get too many errors.

There are various other options to help you edit and organise the notes you've taken, and the software is very simple to use. We were also impressed by how fast and effective the Zpen is at getting your handwritten notes onto a computer and, provided you're willing to work with the device by writing neatly and making use of the training mode, it should serve you well.

Paul Lester

Verdict

Pros Fast and easy to use; compact design; comfortable fit; well integrated software

Cons Won't suit those with bad handwriting; many will prefer to use a scanner instead

Overall Something of a niche product, but it's very effective at converting handwritten text to digital documents quickly and easily

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £99.99

Contact Dane-Elec
www.danedigital.com

Specifications 300-900dpi image resolution • 1GB capacity • Infra-red • USB1.1 • Standard ink refills • Paper format: up to portrait-orientated A4 • Receiver dimensions: 110x28x40mm (wxdxh) • 56g (receiver) • 16g (pen)

MEDIA PLAYER

Electro Box Mishake

A new way of controlling media playback



Using what it calls Shocktronix, the Mishake allows you to manipulate certain aspects of media playback, along with the range of specifically designed extras, by shaking or tilting to the left or right. This can be used to skip between tracks, video files or photos.

If you don't get on with the system, you can disable it and stick with the on-screen controls, which are accessible through the 2.4in touchscreen display. Many of these are small, but the included triangular stylus offers more precision. However, we didn't find

this particularly useful – the touchscreen isn't responsive and we often had to touch a button repeatedly to get it to work.

Aside from video, audio and photo playback, there's an FM radio, voice recorder and text reader. A Canvas mode allows you to doodle using the stylus, but it's little more than a gimmick. The Shocktronix-based applications include a digital spirit level, pedometer and a couple of games. The system works better with these extras than with media control, but we can't see any of them having lasting appeal.

Music and photos are transferred using drag-and-drop, but the AVI converter application must be used to upload video. We were impressed with the video playback quality, but less so by the audio – quality is far below the standards set by rivals such as Apple and Sony. There's also a very limited degree of control over media, which needs to be browsed through a folder interface rather than artist, album and genre categories.

We were ultimately disappointed by the usability and performance of a player that seemed to have a lot of potential. This, combined with the limited 4GB of storage (upgradable via Micro SD by an extra 2GB), means there are too many holes in the Mishake's armour to recommend it.

Paul Lester

Verdict

Pros Clear, colourful display; good range of features

Cons Temperamental touchscreen; audio quality not great; limited storage

Overall An interesting idea, but doesn't bring anything particularly useful to the table

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £119.95

Contact Electro Box 0845 450 6202
www.mishake.com

Specifications 4GB storage • Micro SD slot • 2.4in touchscreen display • Format support: MP4; AVI; MP3; WAV; BMP; JPG • Built-in speaker • 80x13x47mm (wxdxh) • 40g

PC CASE

Hiper Osiris

A well-built case that's easy to access



Constructed from aluminium alloy (6063 T5 to be exact), the top, rear and front of the Osiris PC case have a stylish, brushed-metal black finish. The side panels are plain anodised black, and the left-hand one includes a clear panel with a black mesh covering.

Both side panels have a pair of sprung metal latches that you release by sliding them down. During testing we found this to work much better than a lot of tool-free panels we've seen.

The black finish continues inside, which makes the silver motherboard plate stand out even more, but this isn't removable, which is a real shame. Three 120mm fans are included for cooling: one sits in the roof; another in the back panel and the third lies at the front of the removable 3.5in drive bay. If you need more ventilation, you can remove the acrylic window (tiny screws hold it in place) in the side panel and just leave the mesh.

To access the 3.5in drive bay, you have to take off both side panels and the front panel, though this presents no problems as the front panel is held on by good-quality pin clips. Undoing four thumbscrews releases the bay, which has fins on the top to aid drive cooling and rubber mounts to reduce case noise through hard drive vibration. The expansion plates are held on by thumbscrews, and the rear panel has been pre-drilled and grommeted to take water-cooling pipes.

Hiper has included plenty of fixing screws, tie wraps (to tidy up any cabling) and other bits to help you finish installing your various components into the Osiris. And instead of supplying it in a standard cardboard box, Hiper provides a neat zip-up bag for easy transportation.

Simon Crisp



Verdict

Pros Build quality; easy-to-use latches; stylish

Cons Fixed motherboard plate

Overall Another very well-built case from Hiper, with a lot of attention to detail, it's just a shame that the motherboard plate is fixed

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £79.90

Contact Hiper 01908 225 588

www.hipergroup.com

Specifications ATX midi case • Four 3.5in drive bays • Five 5.25in drive bays • Three 120mm fans • 202x526x425mm (wxdxh) • 8.5kg

PC CASE

Akasa Omega

Excellent build quality and some interesting features



The Omega follows on from Akasa's Eclipse range of cases, and has a high level of build quality and some neat design features.

Not only are the side panels removable, but the roof is too, which makes fitting components, such as power supplies and water cooling, easier than it usually is. If you plan to dabble in water cooling, both the left-hand side panel and the roof have mesh cooling grilles that can be removed and replaced by a water-cooling radiator. Fans can also be placed here

if you're using conventional cooling. However, there are no pre-drilled holes for external water pipes, so if you have an external pump, you'll have to take a hole cutter to the Omega.

Aside from the mirrored stainless steel motherboard plate and rear panel (which are removable as one unit), the Omega is constructed from black, anodised-finished aluminium (1.5mm for the chassis frame, 1.2mm for the removable panels), and weighs 8.5kg. The mounting for the power supply has wide side-supporting flanges and is long enough to support most of today's power supplies; a movable top brace provides extra support.

The front door is hung on three sturdy-looking hinges and has a full-length mesh panel built into it to aid ventilation. Angled slots are cut into the front panel to aid air flow through the front of the case via the front 120mm fan, while a second 120mm fan is built into the rear panel. As the door is flush-fitting, the top half is recessed to allow for any control buttons that may be on your optical drives – four 5.25in drive bays are available.

The lack of holes for water-cooling pipes is disappointing, but otherwise the Omega is a well-designed and sturdy case from Akasa.

Simon Crisp



Verdict

Pros Build quality; tool-free panels and expansion plates

Cons Lack of holes for external water-cooling pipes

Overall Excellent build quality and some interesting design features

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £139.81

Contact Akasa 020 8578 0055

www.akasa.co.uk

Specifications ATX midi tower • Four 5.25in drive bays • Seven 3.5in drive bays • Two 120mm cooling fans • I/O panel: two USB; two audio; Firewire; eSata • 240x560x460mm (wxdxh) • 8.5kg

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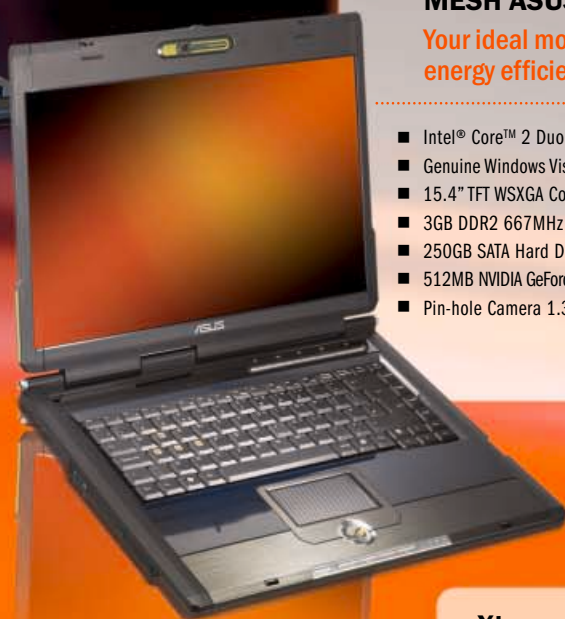
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Overall: ★★★★★

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cooling fans. The fans use sleeve bearings, which enable them to deliver high output at low noise. Akasa quotes 17.5dBA.

There are three colours to choose from (blue, red and green), each with crystal frames and four LEDs in the appropriate colours.



Be Quiet BN077 Dark Power Pro

£199.74

www.be-quiet.net

Overall: ★★★★★

If you are going down the multi-graphics card, multi-drive route with your PC, you need a good reliable source of power. Be Quiet's flagship 1,200W PSU should give you all the power you need with some future-proofing thrown in for good measure. The modular supply comes with six separated 12V rails and an efficiency rating of 88 per cent.

Buffalo Ministation 500GB

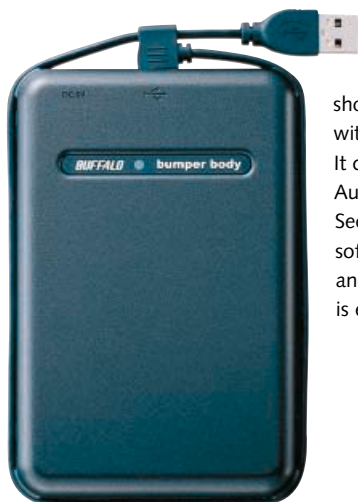
£109.26

www.buffalo-technology.com

Overall: ★★★★★

Fancy having half a terabyte of storage in your pocket? Buffalo's latest Ministation is just what you need. The 500GB 2.5in hard drive sits in a lightweight (190g)

shock-resistant chassis with a USB2 interface. It comes with Memeo Autobackup and Securelockware software so backing up and securing your data is easily achieved.



Case Logic UCS-15 Urban Messenger Bag

£59.99

www.thexsrestore.co.uk

Overall: ★★★★★

With its mix of hard-wearing canvas and felt, this bag looks more like a old-fashioned school bag as opposed to a notebook carrier. It certainly feels tough, and with interior dimensions of 37.5x5.5x28.5mm (wxdxh), it will happily accommodate a 15in notebook. It also features a small detachable USB carry pouch.

Western Digital Caviar Black 1TB
£136.29
Western Digital www.wdc.com
Overall: ★★★★★

Western Digital claims its 1TB Caviar desktop drive is the fastest 7,200rpm drive currently available, and after putting it through our rigorous tests we have to agree (check out the full results at www.reportlabs.com). The drive uses three 333MB platters to reach its capacity and has a 32MB cache.


Noctua NF-P12 Vortex-Control
£16
www.noctua.at
Overall: ★★★★★

Looking for a quiet 12cm fan to help with your case cooling? The NF-P12 Vortex-Control might be just what you're after. The trailing edge of the fan blades have notches cut into them, something Noctua calls Vortex-Control, which helps keep the fan quiet – as low as 12.6dBA.

Enlight 3.5in Card and Sim Reader
£10.99
<http://uk.enlightcorp.com>
Overall: ★★★★★

A slimline card reader for a spare 3.5in drive bay in your PC, not only does Enlight's reader support all the major Flash cards including XD, it also has a Sim card reader built in so you can easily back up your phone's contact list onto your PC.

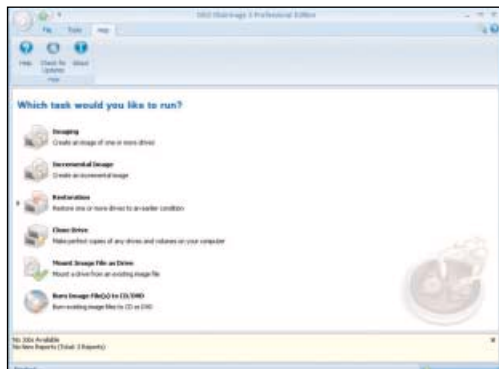

PNY XLR8 PC6400 2GB
£78.89
www.pny.com
Overall: ★★★★★

Last month we looked at PNY's flagship memory in the XLR8 overclocking line, the super-fast PC2-9384 (DDR2 1173MHz). Now we have the entry-level member of the XLR8 clan, a 2GB kit of PC2-6400 DDR2 800MHz, Cas4 (4-4-4-12) memory. Just like its faster sibling it comes with large passive cooling fins and is highly overclockable.

BACKUP SOFTWARE

O&O Diskimage 3

Back up and clone your hard disk with this straightforward tool



With a basic, but clear, interface, it doesn't take long to get to grips with O&O's Diskimage 3.

Building an image takes quite a while the first time around – if you have a large hard disk you could be waiting a couple of hours, although the incremental backup option to update an image with modified files does speed this up for future images.

Images can be restored completely or you can mount them as a disk drive to access individual files via Windows Explorer. Alternatively, you can choose to

clone a hard disk to make a straight copy or burn an image to disc for backup purposes.

A wizard-based approach guides you through much of the process and a range of options are available to help you fine tune the files to be included, or you can opt to add compression and encryption for extra security. You're also supplied with a 'Start CD' with the full package to help you recover your system if Windows won't boot.

Improvements over previous versions include more detailed reports and a time-scheduled backup tool, which will help configure automatic imaging on a regular basis. This works well and even allows you to import scripts or batch files to run before and after backup; the idea being you can start or stop services or applications that may affect the integrity of the image.

Diskimage 3 is quite a straightforward solution at heart. You're given a good degree of control over image creation, but it would have been nice to see some extras, such as traditional backup tools or disk optimisation. Although there are some added features with this version, there's not really enough to tempt existing users to upgrade.

However, as a basic package, it's straightforward to use and fairly light on system resources. *Paul Lester*

Verdict

Pros Easy to use; effective backup scheduler; price

Cons Quite basic; lack of additional features

Overall Works well, but lacks many of the additional features of more comprehensive backup suites

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £19.99

Contact O&O

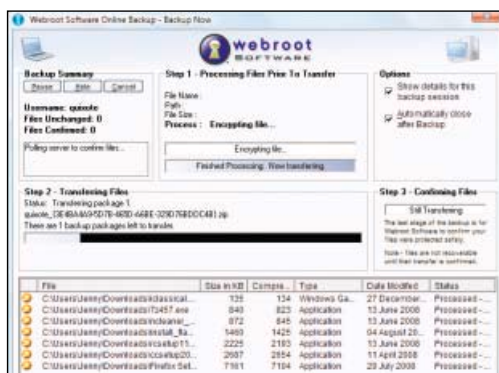
www.oo-software.com

System requirements 800MHz processor • 512MB Ram • 30MB hard disk space • Windows 2000/XP/Vista

BACKUP SERVICE

Webroot Secure Backup

Online backup service that's a cinch to use



Secure Backup is Webroot's first foray into backup software – previously the company has concentrated on security products. Webroot acknowledges that backing up is such a chore that many of us simply don't bother, so Secure Backup is intended to be a click-and-go affair targeted at home and small-business users.

The focus is on web backup, which has numerous benefits over a traditional, on-site approach. First and foremost, there's no messing about with blank DVDs or external hard disks. Backups are also generally more

robust and secure (fire, theft, damaged media aren't an issue), and you can access your data from almost anywhere; you can share it, too. Data is encrypted before being sent, is uploaded via 128-bit SSL, then encrypted again at the server. Used with a strong password, your data benefits from triple-layer protection.

Secure Backup's cost depends on how much storage you require. It starts at £14.95 per year for 2GB and goes up to £49.95 for 50GB. With most broadband upload speeds being relatively slow, your initial backup is likely to take some time. Afterwards, though, the software will enter incremental mode, backing up only files that have changed or been added. Usefully, when you back up files that already exist, all older versions are automatically retained. Also, individual files can be tagged for backup as soon as they change.

If required, you can make traditional, local backups, and there are few options to play with. The interface is also uncluttered and simple to use.

Webroot's tariffs are reasonable, although rival service Carbonite (www.carbonite.com) provides unlimited storage for just \$49.95 (£27); there are also numerous free online backups services available. But being so easy to use, Webroot's offering is a solid choice that won't disappoint. *Jason d'Allison*

Verdict

Pros Three-PC licence; easy to use; useful tagging and version-retention features

Cons Interface is a little bland; cheaper alternatives available; can be sluggish when starting up

Overall Well-rounded and deceptively simple backup software for homes and small businesses

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price From £14.95 per year

Contact Webroot 0845 0822 498

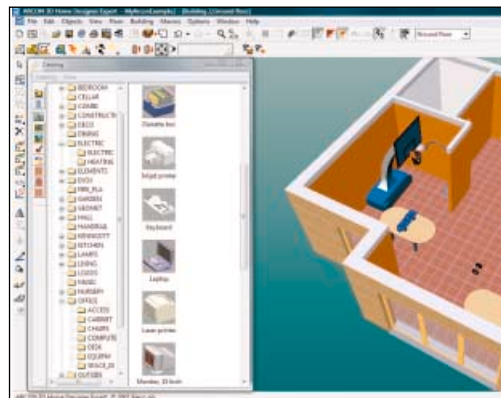
www.webroot.co.uk

System requirements 266MHz processor • 64MB Ram • 30MB hard disk space • Windows XP/Vista

DESIGN SOFTWARE

Arcon 3D Home Designer Expert

Powerful and intuitive architectural software to help with your DIY



If you're thinking of adding an extension, refitting your kitchen or even self-building a house, 3D Home Designer Expert is aimed at you. From wall to wallpaper, it's designed to help you visualise your plans quickly and easily.

The program works in two modes, between which you can switch at will. First is the construction mode, where the floorplan is laid out. You can start from scratch, building your structure wall by wall or use the Project Assistant. In design mode, you fill your

structure with furniture and fittings. There are about 4,800 objects to choose from and around 1,300 wall coverings, textures and floorings.

At any time, you can toggle between 2D and 3D views. Most of the construction and design is best done in 2D, but the 3D perspective is fantastic for gaining an impression of how things will look in reality. There are many solid and wireframe options, you can rotate models through all axes, and add shadows/reflections.

The program's interface is a doddle to navigate. Most tasks are self-explanatory – if you can use Microsoft Paint and know how to drag and drop, you're in business. You don't need any Cad (computer-aided design) skills, and if you get stuck, there's extensive integrated help and – refreshingly – a thick, printed manual.

Despite all the features, the software is no replacement for an architect or project manager (Arcon 3D Architect, at £199.99, aims to fill that role). Neither will it advise you on planning and building regulations, so you may need to seek professional advice. Even so, the drawings the software produces will serve you well when you do contact a pro, saving both time and money.

Overall, 3D Home Designer Expert is one of the best products of its type we've seen. *Jason d'Allison*

Verdict

Pros UK-centric; gentle learning curve; printed manual

Cons Pricier than some rivals; no advice on good design or legal pitfalls

Overall Feature-rich home design software suited to both just-for-fun usage and more serious planning

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £49.98

Contact Eleco

www.3darchitect.co.uk

System requirements 1GHz processor • 512MB Ram • 840MB hard disk space • DVD-Rom drive • Windows XP/Vista

WEBMAIL

GMX Webmail

Online email with the look and feel of a desktop client



GMX is different to most webmail offerings in that the interface looks like a traditional email client. Thanks to its range of Pim (personal information manager) features, GMX is more than just an email service. Along with an address book and calendar, you also get 1GB of storage for your files; shared access to this can be set up if required.

The email page opens in a new window, whether in Firefox or Internet Explorer 7 (Opera is not fully supported yet), which furthers the illusion that it's

working as a separate program rather than just existing in a tab. This is an idea similar to that of Mozilla Prism (www.pcw.co.uk/2204140), and it's one that works very well since it's easy to lose tabs in a browser when more than a couple are opened.

Email organisation is based on the traditional method of folders. Tagging is preferable, not just because it makes it much easier to identify emails, but also because it allows for much better handling of emails that fall into more than one category or project.

The address book can import details from Outlook, Outlook Express and Thunderbird; individuals can also be added with a Vcard file. It's also good to see there are export options for Outlook and Outlook Express.

The organiser is impressive and can send invitations to Outlook users; these are sent as ICS files, so they can be opened in plenty of other applications, including Windows Calendar in Vista. Creating appointments is as simple as dragging a selection for the time to be booked.

GMX is a good webmail service and is especially suited to those used to the traditional layout of email clients who don't want to change. The use of folders rather than tagging is a disappointment, but the rest of the features make up for this. *Tim Smith*

Verdict

Pros Polished interface; read mail from other accounts; Imap or Pop access with ordinary client

Cons No tags for organising emails

Overall A good webmail service, especially for those wanting the familiar interface of traditional email clients

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price Free

Contact GMX www.gmx.co.uk

System requirements Internet Explorer 7 or Firefox

SECURITY SUITE

Bullguard Gamer's Edition

Fully featured security suite targeted at hard-core gamers



An expanded version of the company's Internet Security 8.0, Bullguard's Gamer's Edition includes the same core modules: Anti-virus, Anti-spyware, Firewall, Spam filter, Backup and Support. They're a competent, well-integrated set of programs on a par with anything else on the market.

The Backup module, while being fairly simple, is a welcome inclusion. The Support module is a neat trick, too, integrating email assistance into the package. Bullguard also claims to respond to queries within an hour, every day; our query was answered in 41 minutes.

The gaming features are grouped in a new, separate Gaming module. Here, you can specify how the suite behaves whenever you're busy blasting away baddies or levelling up your troll. Crucially, you can suppress all messages – firewall warnings, update pop-ups, and so on. You can also turn off email monitoring, restrict virus scanning and open or block certain network ports. In fact, there's a whole list of special tweaks you can implement, all geared towards giving you fast, uninterrupted gameplay.

Every game can have its own settings. These are held in a profile, which springs into action whenever the game runs. You get profiles for several dozen current games straight out of the box, and Bullguard promises to provide new ones via updates. You can add your own, too – it's just a matter of linking to a game's .exe file.

Gamer's Edition is £5 cheaper than Internet Security 8.0. However, you only get 1GB of online backup storage (instead of 5GB) and a licence for just one PC (instead of three). That's going to be a turn-off for many users, which is a shame. Even so, it's still competitively priced, and the Gaming module is such a smart idea we fully expect it to be copied in rival suites.

Jason d'Allison

Verdict

Pros Easy-to-use interface; unique and genuinely useful gaming features; integrated backup and support

Cons No anti-phishing tools; skimpy licence and online storage; questionable value compared to Internet Security 8.0

Overall Solid, trustworthy protection, but in future we hope to see the gaming features included in the standard suite

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £39.99

Contact Bullguard

www.bullguard.com

System requirements 1GHz processor • 512MB Ram • 200MB hard disk space • Internet Explorer 5.5 or higher (for remote access to backups – non-Microsoft browsers not supported) • Windows XP/2000/Vista

ADVENTURE GAME

Lego Indiana Jones: The Original Adventures

Indy's back – and this time he's a chip off the old block



Although it accompanies Indy's return to the big screen, Lego Indiana Jones isn't the usual sloppy movie tie-in.

Instead, the game takes a nostalgic trip back to the first three films in the series, giving them the same Lego treatment that was previously used with surprising success with the two Star Wars trilogies.

The idea is to platform your way through various Lego-ised set pieces from the movies, grappling with enemies, solving puzzles and collecting treasures as

you go. Often the way forward requires the assembly of some Lego bricks, but this is less complicated than it sounds – a single button press does the trick. Even if you're not familiar with the concept, Lego Indiana Jones is a fantastically simple game to get your head around.

If anything, it's just mildly less enjoyable than its Star Wars equivalents, simply because the subject matter lends itself slightly less well to the format.

For instance, each level features Indy plus another character whose special ability you'll need to use to progress at certain points. In single-player mode you can switch between Indy and the computer characters at will, while in two-player mode your on-screen partner can be controlled by a real-life buddy.

But, where Lego Star Wars was fun to play whether you had Yoda, Chewie or R2-D2 as your sidekick, in Lego Indiana Jones, the secondary characters just aren't as interesting.

That said, Lego Indiana Jones certainly offers a lot of game for your money. There are effectively three games in one here – one for each of the original films. On top of that, there are many hidden challenges and items to collect, plus the entire thing can also be replayed co-operatively.

Jonathan Parkyn

Verdict

Overall There's a lot of game here for your money

Overall ★★★★★

Price: £20

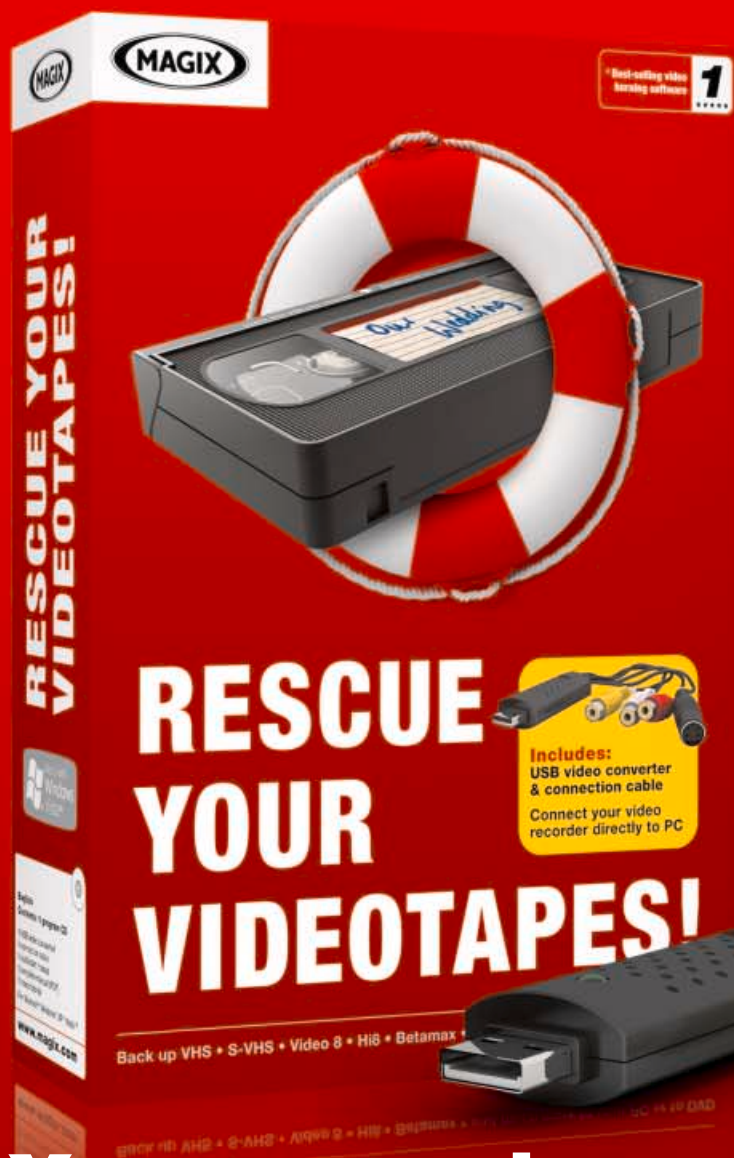
Contact: Activision

www.legoindianajones.eu

System requirements: 1GHz processor • 512MB Ram • 64MB graphics card • DVD-Rom drive • Windows XP/Vista

* Best-selling video
burning software

1
★★★★★



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How we test

Performance testing is an important part of *PCW's* reviewing process, and to obtain our authoritative results we use the UK's best PC testing resource. Here we explain why you can trust our results and give you a tour of our most frequently used benchmark programs

At the core of our PC performance tests are industry-standard benchmarks from Bapco and Futuremark. Sysmark 2007 Preview is the latest Vista-compatible version in a long line of Bapco benchmarks and it allows us, for the first time, to compare the application performance of Windows XP and Windows Vista-based systems with the same benchmark. It tests real-world application performance by running a series of scripts to mimic authentic user tasks. It loads and runs full versions of 14 market-leading applications, which are:

- Adobe After Effects 7
- Adobe Illustrator CS2
- Sketchup 5
- Adobe Photoshop CS2
- Autodesk 3ds Max 8
- Sony Vegas 7
- Macromedia Flash 8
- Microsoft Excel 2003
- Winzip 10
- Microsoft Outlook 2003
- Microsoft Powerpoint 2003
- Microsoft Word 2003
- Microsoft Project 2003
- Microsoft Windows Media Encoder 9 series

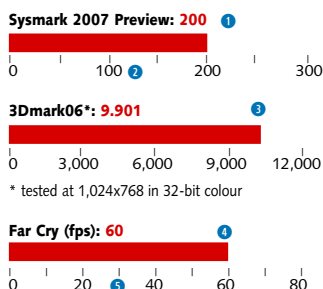
Note that scores from Sysmark 2007 Preview are not comparable to scores from previous versions of Sysmark. All scores are relative to the Sysmark reference machine, which scores 100 (see below for details).

In *PCW's* labs, our staff have over 20 years of combined testing experience. We know all the perils and pitfalls of practical benchmarking, and we contribute to the development of industry-standard benchmarks through our full membership of Bapco (www.bapco.com), the non-profit benchmark consortium. Listed below are the main benchmarks we use for testing PC systems and components.

- Bapco Sysmark 2007 Preview – an application-based benchmark that tests real-world system performance.
- Futuremark 3Dmark06 – the latest version of 3Dmark that tests DirectX 3D graphics performance.
- Games – we use built-in benchmarks in Far Cry and Fear to see how graphics cards perform in a real-world games.
- Futuremark PCmark05 – a synthetic benchmark used to test the performance of a PC's major subsystems.
- Test beds – we use standardised AMD and Intel-based test rigs to test components and peripherals.

There's more information about our testing procedures and benchmarks on our Labs site at www.reportlabs.com/testbed/bguides/benchmarks.php.

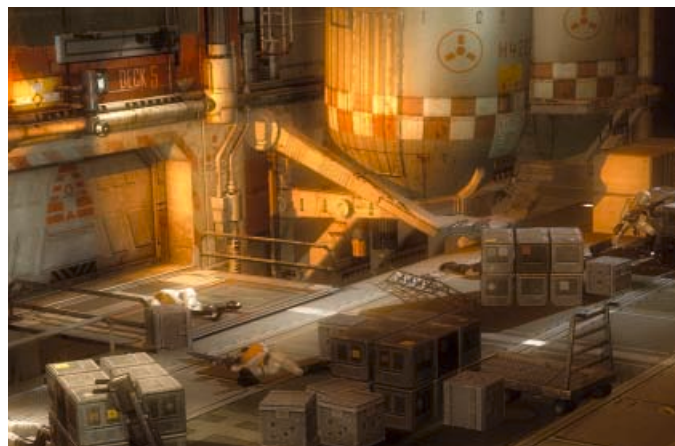
Performance



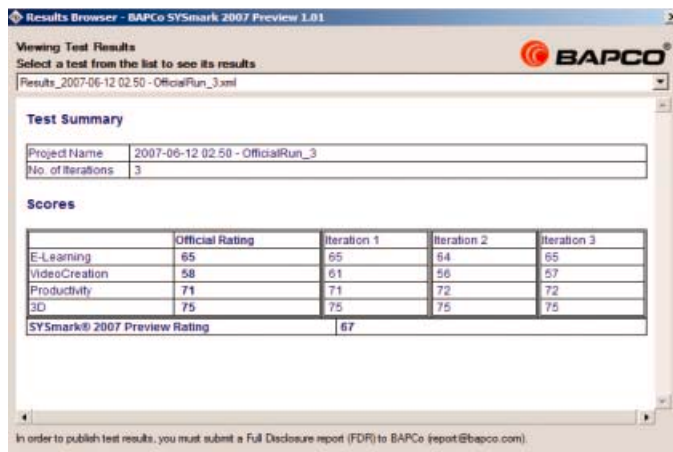
- 1 A score of 200 indicates that the system is twice as fast as the reference PC.
- 2 The reference PC (Intel Core 2 Duo E6300 1.8GHz, 1GB Ram) scores 100.
- 3 An Nvidia Geforce 8600GT would score in the region of 9,900.
- 4 Fear: A score of 60fps (frames per second) or higher is most desirable.
- 5 A result of 30fps or above means the machine can produce playable frame rates at the tested resolution.



PCmark05 measures memory, processor, graphics and hard drive performance



3Dmark06 is used to test 3D graphics performance



Sysmark 2007 Preview tests real-world performance using common apps

EXPERIENCE FIRST CLASS!

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ENGINEERING

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Best Buys

Your one-stop guide to the best-value products reviewed by PCW



With countless products available, shopping around for a new PC, peripheral or software package isn't an easy task, but with our Best Buys guide, you can make a quick purchase with confidence. We've split our Best Buys into 40 of the most popular categories, covering everything from desktop and notebook PCs right through to digital cameras and software.

Every month we'll update our Best Buys to include our most recent reviews and check the current pricing, although that's not to say you won't find a bargain online (try our price comparison site at

www.pcw.co.uk/bestprices). You'll also find the date of the magazine in which the product was first reviewed, along with an alternative suggested product for that category. If the Best Buy entry has a web code listed alongside it, this means you can read the full product review on our website. Simply head online and use the format [www.pcw.co.uk/\[web code\]](http://www.pcw.co.uk/[web code]) – for example, www.pcw.co.uk/2208243.

Each Best Buy product has gone through our rigorous testing and reviewing procedures, making this your one-stop guide to the best products on the market.

BUDGET PC



Zoostorm 3364-2354

Price: £499

Reviewed: July 2008

www.pcnextday.co.uk

Web code: N/A

This PC comes with a quad-core Intel Q6600 processor, 2GB of Ram, a 250GB hard disk and a 19in TFT. The only downside is the integrated graphics, but with expansion opportunities inside the case, this can be rectified.

HIGH-END PC

Cyberpower Liquid Gamer Infinity SLI

£1,499.30

Reviewed: September 2008

www.cyberpowersystem.co.uk

Web code: 2221136

This PC's CPU is overclocked to 4.15GHz and it gives excellent 3D performance thanks to two Geforce 8800GTS graphics cards. The price doesn't include a monitor.



ALTERNATIVE

Chillblast Fusion Sentinel

£699 **www.chillblast.com** **Web code:** 2211955

A well-built, quiet PC with a quad-core processor, good all-round performance and space inside for future upgrades. It also features a Geforce 8800GT graphics card.

ALTERNATIVE

Ultraviolet Genesis XOC

£4,464.93 **www.ultravioletmachines.com** **Web code:** N/A

The price may make your eyes water, but it doesn't get much faster than this, with an overclocked QX6850 and two 8800 graphics cards.

BUDGET NOTEBOOK



Samsung Q210

£675.98

Reviewed: November 2008

www.samsung.com/uk

Web code: N/A

It's not suited to gaming, but this notebook has all the benefits of Intel's latest Centrino 2 platform. Powered by a T8400 Core 2 Duo processor clocked at 2.26GHz, it's a stylish workhorse computer.

HIGH-END NOTEBOOK

Toshiba Satellite P300-172

£1,198.99

Reviewed: September 2008

www.computers.toshiba.co.uk

Web code: N/A

This notebook has a large storage capacity, great CPU performance and it's also a joy to use. The pleasant screen and sleek chassis, along with its quiet and cool operation, makes it a great all-rounder.



ALTERNATIVE

Hi-Grade D7000SRL

£499 **www.hi-grade.com** **Web code:** N/A

With a stylish chassis, decent performance, Bluetooth and HDMI, you get a lot for your money with this 15.4in notebook.

ALTERNATIVE

Acer Aspire 8920G

£1,289.99 **www.acer.com** **Web code:** N/A

Thanks to a recent price drop, this 18.4in notebook is now even better value for money. Highlights include a 2.5GHz processor and Blu-ray drive.

WINDOWS HOME SERVER



Windows Home Server
Fujitsu Siemens Scaleo 1900
Price: £469
Reviewed: July 2008
www.fujitsu-siemens.co.uk
Web code: N/A
It might not be the most attractive piece of kit, but this Windows Home Server from Fujitsu Siemens has good read-and-write performance and useful added extras.

ALTERNATIVE

Belinea 0.center
£386.58 www.belinea.com Web code: N/A
With a striking design and solid performance, the 0.center is a great little Windows Home Server with easy hard disk access and good diagnostic tools.

ULTRA-MOBILE PC

Acer Aspire One
£200
Reviewed: September 2008
www.acer.co.uk
Web code: 2220487
This portable notebook combines a decent keyboard, clever storage system and a great design. Its Intel Atom processor runs at 1.6GHz and is backed up by 512MB of Ram. Best of all, it's priced at just £200.



ALTERNATIVE

Asus Eee 901
£319 www.asus.com Web code: 2220488
The new Eee's strong point is its battery life. In our tests, it lasted six and a half hours away from the mains, which is a real improvement over the last model.

BUDGET GRAPHICS CARD



Palit GeForce 9600GT
512MB Sonic
Price: £121.32
Reviewed: June 2008
www.palit.biz
Web code: N/A
The G94 GPO used by this card is basically a cut-down version of the G92 8800 and GTS cards, but with fewer, yet faster-clocked, stream processors.

ALTERNATIVE

Asus EAH2400Pro
£32.89 <http://uk.asus.com> Web code: N/A
This card features low power consumption and, although not as fast as the Radeon HD 2400 Pro cards, it's cheap and has some impressive video capabilities.

HIGH-END GRAPHICS CARD

Sapphire Radeon HD4870
£181.76
Reviewed: October 2008
www.sapphiretech.com
Web code: 2223563
A fast card at a great price. To give an idea of the rendering potential of this card, it managed 46 frames per second with 4x anti-aliasing and 4x antroscopic filtering turned on at 1,280x1,024 resolution.



ALTERNATIVE

Zotac Geforce GTX 280 AMP Edition
£366.27 www.zotac.com Web code: 2223078
Zotac's version of the GTX280 is the fastest single core graphics card we've tested. The board also supports Nvidia's Hybrid Power technology.

TFT (17-22IN)



Philips 220WS8
Price: £189
Reviewed: February 2008
www.philips.co.uk
Web code: N/A
This 22in TFT screen has superb image quality, is evenly lit and, with a power draw of just 35W, is also extremely efficient. The icing on the cake is Philips' excellent pixel policy. A great buy.

ALTERNATIVE

Viewsonic VX2255
£259 www.viewsoniceurope.com Web code: N/A
The VX2255's clear and excellent pixel policy, along with its multimedia features, mean it is great value at £259, despite the distinctly average image quality.

TFT (24IN+)

Philips 240BW8
£309.95
Reviewed: September 2008
www.consumer.philips.com
Web code: N/A
This 24in screen has a professional feel and is well-suited to any application where you need to be sure that your on-screen colours are accurate. It also comes at a good price and features HDCP support.



ALTERNATIVE

Iiyama B2403WS
£299.60 www.iiyama.co.uk Web code: N/A
The 24in B2403WS from Iiyama offers a good balance of performance and features, and is suitable for a wide range of uses.

SMARTPHONE



Nokia E71

£From free

Reviewed: November 2008

www.nokia.co.uk

Web code: N/A

Despite being incredibly thin, this stylish handset has a full Qwerty keyboard, making it fantastic for emails. It also has astounding battery life, lasting for up to 17 days in standby mode.

ALTERNATIVE

O2 XDA Stellar

£From free www.o2.co.uk Web code: 2207227

This smartphone features a slide-out display, Qwerty keyboard, built-in GPS and Windows Mobile 6. The screen also tilts for easier typing.

SAT NAV

Tomtom Go 720

Price: £309

Reviewed: February 2008

www.tomtom.com

Web code: N/A

You're paying a bit more than you might for a number of perfectly capable rivals, but you get so much for your money with the Tomtom Go 720, including a customisable display and great performance on the road.



ALTERNATIVE

Mio 620t

£269 www.mio-tech.be Web code: N/A

Mio's new software is impressive and, considering the range of features, it's priced competitively. The maps look great and performance is equally good.

DIGITAL CAMCORDER



Canon HV30

£700

Reviewed: November 2008

www.canon.co.uk

Web code: N/A

With fantastic picture quality, this camcorder is the one to buy if you're looking to make the most out of your HD television. It also has a great selection of manual controls and lets you edit your footage.

ALTERNATIVE

Panasonic HDC-SD9EB

£450 www.panasonic.co.uk Web code: N/A

Able to capture decent HD footage yet remaining light, portable and cheap, this Panasonic camcorder is a great buy for those on a budget.

DIGITAL CAMERA

Samsung NV24HD

£249

Reviewed: October 2008

www.samsungcamera.com

Web code: N/A

With excellent build quality, a 10.2-megapixel CCD and wide angle 24mm lens, this digital camera is perfect for taking detailed outdoor shots. It also features 720p movie recording, so you can capture video in high definition.



ALTERNATIVE

Pentax Optio A40

£219 www.pentax.co.uk Web code: N/A

This 12-megapixel compact camera houses some great features, not least of which is the excellent image stabiliser. It also shoots great photos.

PORTABLE MEDIA PLAYER



Sony NWZ-A815

Price: £89

Reviewed: January 2008

www.sony.co.uk

Web code: 2203060

It might lack some of the extra features found in other media players, but this Sony model excels in terms of audio quality and is easy to navigate. It also comes with a decent set of headphones.

ALTERNATIVE

Apple iPod Nano

£129 www.apple.com/uk Web code: 2199118

An astonishing design that produces good-quality video and audio. It also benefits from excellent battery life.

MEDIA STREAMER

D-Link DSM-330

£135

Reviewed: October 2008

www.dlink.co.uk

Web code: N/A

With its excellent usability and simple setup procedure, this device makes sharing your media collection simple. It features an HDMI port, can output 720p video and performs extremely well.



ALTERNATIVE

Archos TV+

£249 www.archos.co.uk Web code: 2210545

With a 250GB hard disk, this device not only streams media across a network, but can also store your entire video, music and photo collection locally.

LASER PRINTER



Brother HL-2170W

Price: £149

Reviewed: March 2008

www.brother.co.uk

Web code: 2207225

If you're looking for a good-quality monochrome laser printer for general home use, this Brother model is definitely worth considering. It's fast, compact and even has a wireless adapter. A bargain at this price.

ALTERNATIVE

Lexmark X500n

£301 www.lexmark.co.uk Web code: N/A

An amazingly good-value laser printer, considering it's not only colour but also includes a scanner allowing you to scan, copy and print at speed.

PHOTO PRINTER

Canon Selphy CP750

Price: £110

Reviewed: October 2007

www.canon.co.uk

Web code: 2193769

It's a little bulky when in use, but this dedicated photo printer can produce high-quality prints in less than 70 seconds. And a 2.4in display allows you to perform basic image editing before printing.



ALTERNATIVE

Sony DPP-FP90

£150 www.sony.co.uk Web code: 2196751

It's not particularly cheap to run, but this printer produces high-quality photos from a variety of sources and is reasonably fast as well.

MULTIFUNCTION PRINTER



Canon Pixma MP610

£139

Reviewed: November 2008

www.canon.co.uk

Web code: N/A

Canon's compact and stylish MFD has a decent mix of top-notch quality and fast printing and can also print directly to DVDs. Running costs are relatively low, which is surprising given the low price tag.

ALTERNATIVE

HP Photosmart C8180

£298.45 www.hp.com/uk Web code: N/A

An expensive, but hugely impressive MFD, the Photosmart C8180 is packed full with useful features and is also incredibly easy to use.

NETWORK-ATTACHED STORAGE

Qnap TS-209

Price: £254

Reviewed: Christmas 2007

www.qnap.com

Web code: 2200223

If you're after a Nas device that does more than just share files over your network, this is it. You can schedule Bit Torrent downloads, stream media to UPnP devices and install your own drives in it.



ALTERNATIVE

Acer Aspire EasyStore

£499 www.acer.co.uk Web code: 2206105

This Nas device features 2TB of storage (other sizes are available), along with wireless so you can place it anywhere in your home.

POWERLINE NETWORKING



Solwise NET-PL-200AV Push

Price: £50

Reviewed: March 2008

www.solwise.co.uk

Web code: 2207035

You'll need at least two of these to get your powerline network running, but they're the best around. Based on the Homeplug AV standard, they're fast, resilient to electrical noise and great value for money.

ALTERNATIVE

Devolo Dlan 200 AV

£149 www.devolo.co.uk Web code: N/A

Small and well-designed, these Devolo powerline devices use the Homeplug AV standard and have pre-programmed Quality of Service rules built in.

WIRELESS ROUTER

Linksys WAG325N

Price: £99.99

Reviewed: May 2008

www.linksys.com

Web code: N/A

It might look a little unconventional, but this Draft-N router from Linksys performs extremely well. It also features some sophisticated tools, including VPN support and the option of creating virtual wireless networks.



ALTERNATIVE

Solwise Engenius Wireless-N Gigabit Router

£120 www.solwise.co.uk Web code: N/A

It might be a little pricey, but this router performed well in our tests and comes complete with some advanced network filtering tools.

EXTERNAL HARD DISK



CMS V2ABS-CE-120

Price: £175

Reviewed: Christmas 2007

www.cmsproducts.com

Web code: 2202396

A portable USB2 external hard disk that weighs a mere 150g and comes with built-in 256-bit AES encryption. Inside the case sits a 2.5in 120GB 5,400rpm SATA notebook hard disk.

ALTERNATIVE

Western Digital Mybook Studio

£204 www.westerndigital.com Web code: 2206075

This stylish 1TB external disk comes with USB2, Firewire 800/400 and eSata interfaces for ultimate flexibility.

INTERNAL HARD DISK

Western Digital WD10EACS

Price: £185

Reviewed: January 2008

www.westerndigital.com

Web code: 2203061

This disk features four 250GB platters to provide 1TB of storage. It includes some advanced technology such as Intelliseek, which calculates optimum seek speeds to lower noise, vibration and power usage.



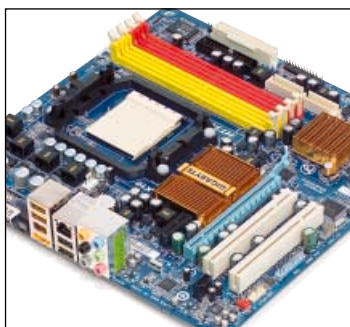
ALTERNATIVE

Toshiba MK2035GSS

£79 www.toshiba.co.uk Web code: 2203064

Weighing just 98g, this 200GB 2.5in SATA hard disk is perfect for increasing the storage capacity of your notebook.

AMD MOTHERBOARD



Gigabyte GA-MA78GM-S2H

Price: £60

Reviewed: June 2008

www.giga-byte.co.uk

Web code: N/A

With a wide range of ports, including eSata, and a good selection of options in the Bios, this is a great AMD board. Finally, after two years of losing to Intel, AMD's engineers have a winner on their hands.

ALTERNATIVE

EQS AB1S-RS690MKM

£46 www.eqsc Computers.com Web code: 2204803

The cramped design limits upgrade potential, but it's a keenly priced AMD motherboard that features an on-board HDMI port for HD video.

INTEL MOTHERBOARD

Asus P5E-VM HDMI

Price: £81

Reviewed: June 2008

<http://uk.asus.com>

Web code: N/A

This board has a great range of features. With the integrated graphics enabled, we comfortably overclocked it to 3GHz with our 2.4GHz Core 2 Quad Q6600 attached, so enthusiasts should take note of its capabilities.



ALTERNATIVE

Gigabyte GA-G31MX-S2

£53 www.giga-byte.com Web code: 2202711

Considering the price, you get plenty of features on this Intel board, including Intel's G31 Express chipset and ICH7 Southbridge.

PC CASE



Hipergroup Osiris

£79.90

Reviewed: November 2008

www.hipergroup.com

Web code: N/A

Despite its low price, this case features terrific build quality. And with easy-to-use latches, swapping out components is a cinch. It comes with four 3.5in and five 5.25in bays, and also looks great.

ALTERNATIVE

Akasa Omega

£139.81 www.akasa.co.uk Web code: N/A

Excellent build quality and some interesting design features make this a great case for those who are often changing components.

POWER SUPPLY

Akasa Powermax 1000

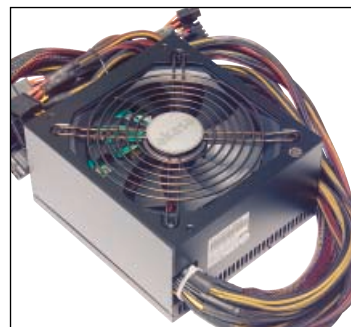
Price: £135.11

Reviewed: March 2008

www.akasa.co.uk

Web code: 2207736

This 1,000W power supply has two +12V rails and its single 135mm dual-ball bearing fan makes it a lot quieter than you would expect. It also comes with a variety of power connectors.



ALTERNATIVE

Enermax Galaxy 1000W

£233.83 www.enermax.com.tw Web code: 2164011

The 1,000W Enermax Galaxy power supply will suit those with SLI graphics and other power-sapping components, but it comes at a fairly high price.

OFFICE SUITE



Microsoft Office 2007

Price: £357

Reviewed: May 2007

www.microsoft.com

Web code: 2183475

The new interface to Office is something you'll either like or loathe – we like it, but upgrading comes at a price, both in cash and in effort. Despite this, it's still the leader in office productivity software.

ALTERNATIVE

Corel Wordperfect X3

£276 www.corel.co.uk Web code: 2149856

This latest version of Corel's office suite includes tools such as PDF exporting, along with improved compatibility with other office applications.

SYSTEM UTILITY

Acronis True Image 11

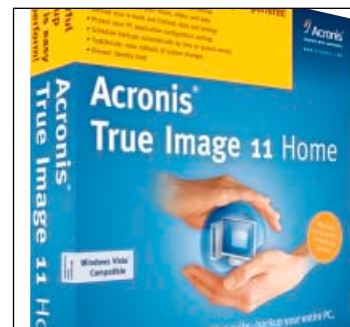
Price: £39.99

Reviewed: April 2008

www.acronis.co.uk

Web code: 2208669

True Image 11 is an excellent backup and recovery solution that offers an unprecedented level of control over disk cloning, scheduled backups and secure file deletion. And, despite the range of features, it's easy to use.



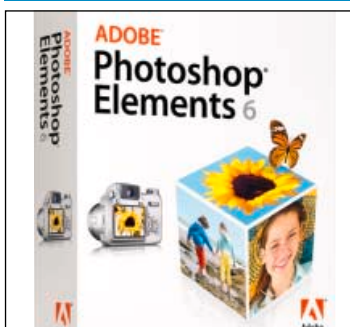
ALTERNATIVE

Paragon Hard Disk Manager

£29.99 www.paragon-software.com Web code: 2205339

A comprehensive, all-in-one suite of hard disk maintenance and backup tools that's easy to get to grips with and comes at a good price.

IMAGE EDITING



Adobe Photoshop Elements

Price: £69

Reviewed: June 2008

www.adobe.co.uk

Web code: N/A

Although the interface could do with some work, this is still the best image editor currently available for home users. With a range of advanced tools, it really does help you get the best from your photos.

ALTERNATIVE

Corel Paint Shop Pro X2

£79 www.corel.com Web code: N/A

A little more expensive than its main rival, Photoshop Elements, but Paint Shop Pro X2 excels in terms of ease of use.

VIDEO EDITING

Pinnacle Studio 12 Ultimate

£90

Reviewed: October 2008

www.pinnaclesys.com

Web code: N/A

Pinnacle has stuck with its usual intuitive interface and added a host of extra features, including new special effects and the ability to import full HD video from AVCHD sources. It can also export direct to Blu-ray.



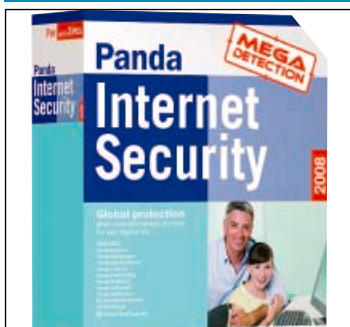
ALTERNATIVE

Cyberlink PowerDirector 7

£59.95 www.cyberlink.com Web code: N/A

With useful 'magic' tools that simplify the editing process, this complete package from Cyberlink is ideal for newcomers to video editing and is well priced.

PC SECURITY



Panda Internet Security 2008

Price: £42.99

Reviewed: January 2008

www.pandasecurity.com

Web code: N/A

A feature-packed internet security suite with fast anti-virus and spyware detection tools, including heuristic scanning. It also has fast scan times and a decent firewall, along with backup and PC optimisation features.

ALTERNATIVE

Agnitum Outpost Pro Security Suite 2008

£30.80 www.agnitum.com Web code: 2204511

Outpost offers solid protection at a competitive price with fast scanning and a quality firewall, although it does lack some extras found in rival suites.

WEB DESIGN

Adobe Dreamweaver CS3

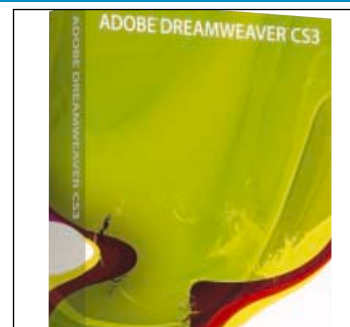
Price: £393

Reviewed: July 2007

www.adobe.com

Web code: 2186591

Powerful HTML coding and design tools along with CSS templates and Ajax widgets will help non-programmers get started. There's also a big emphasis on CSS, including a CSS Advisor tool for newcomers.



ALTERNATIVE

Microsoft Expression Web

£260 www.microsoft.com Web code: 2185242

Expression Web is a very good web-editing suite if you accept the inevitable Microsoft bias, and features CSS support and a powerful interface.

BUSINESS PC



Dell Latitude D531

Price: £586

Reviewed: October 2007

www.dell.com

Web code: N/A

With a dual-core AMD Turion processor clocked at 1.8GHz, 2GB of Ram and Vista Business, this is a good budget model. It also features a built-in DVD writer, 120GB SATA hard disk and both Wifi and Bluetooth.

ALTERNATIVE

HP Compaq dc7800

£598 www.hp.co.uk Web code: 2207533

The space-saving design of this affordable business desktop is very compelling and it can attach directly to an optional HP TFT screen.

BUSINESS PRINTER

HP Laserjet P1505n

Price: £205.63

Reviewed: June 2008

www.hp.com

Web code: N/A

Compact, stylish and quicker than it looks, this Laserjet from HP is a very capable small-business printer and is stunningly good value to boot. It also features an integrated network interface.



ALTERNATIVE

Zebra P100i

£1,245.50 www.zebracard.com Web code: 2212221

A great device for small businesses needing to print plastic cards in volume. It takes up little desk space and can print in full colour.

NETWORK SECURITY



Smoothwall Smoothguard 1000-UTM

Price: £3,231.25

Reviewed: September 2007

www.smoothwall.net

Web code: 2194393

A comprehensive array of security tools, load balancing and failover facilities, and extensive reporting options, mean this network security device justifies the high price.

ALTERNATIVE

Webroot Antispyware Corporate

£22.56 www.webroot.com Web code: N/A

At this price you get a one-year licence for 10 users, which is great value. It also covers two key client security bases in one go.

NETWORK MANAGEMENT

VMware Thinapp 4.0

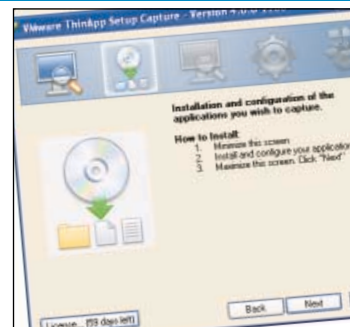
£2,937.50

Reviewed: November 2008

www.vmware.com

Web code: N/A

Although its cost may be an issue for small businesses, Thinapp overcomes many of the issues associated with deploying and managing applications. It features on-demand streaming, USB key deployment and more.



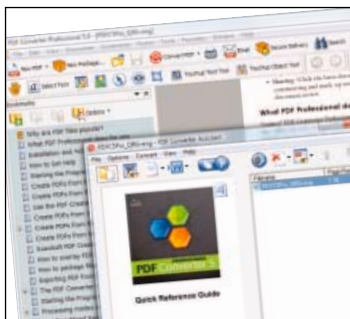
ALTERNATIVE

Prefix IT PrefixNE

Up to £2.94 per PC per month www.prefixit.com Web code: 2205651

Easy to install and use, this network management application allows you to keep track of all the kit on your network and is perfect for small businesses.

COLLABORATION SOFTWARE



Nuance PDF Converter Professional 5

Price: £99

Reviewed: June 2008

www.nuance.co.uk

Web code: N/A

It may often take second billing to Adobe Acrobat, but this latest release is cheaper and just as good – if not better. The only problem is there are so many new tools to learn.

ALTERNATIVE

C2C Archive One Policy Manager

£40 www.c2c.com Web code: 2212370

This is a well-conceived and easy-to-implement exchange storage management tool that can enhance performance and even reduce costs.

BUSINESS ACCOUNTS SOFTWARE

Microsoft Accounting 2008

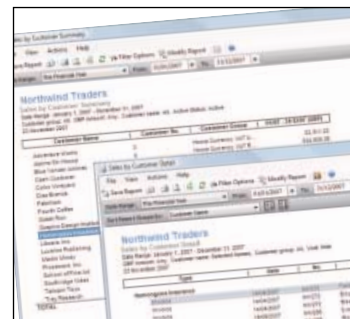
Price: £149

Reviewed: February 2008

www.samsung.co.uk

Web code: 2207529

A late entrant to the UK accounting market, Office Accounting 2008 is easy to use, feature rich and will shake up the competition. It also offers in-depth integration with Outlook 2007 Business Contact Manager.



ALTERNATIVE

Intuit Quickbooks Pro 2008

£299 www.quickbooks.co.uk Web code: 2203178

A sensible update to what is one of the most accessible and easy to master small-business accounting packages around. Includes syncing with Outlook.



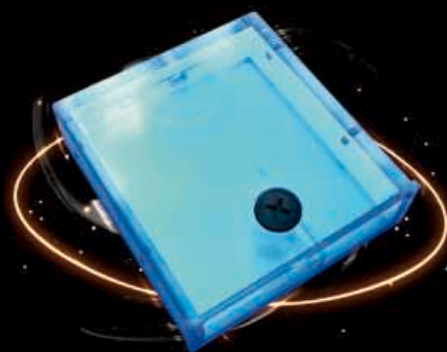
Performance PC Water-Cooling



WHAT IS WATER-COOLING

Water-cooling is a replacement for the traditional heatsink and fan used in PC's. Due to the increased heat output of modern processors, aircoolers can struggle to cope. Water has around 23x the thermal conductivity of air which makes it perfect for cooling high end CPU and GPU's.

In a watercooled system water is pumped to the CPU waterblock where it heats up and then to the radiator where it's cooled back down. All the components are connected in a closed loop in the same way a cars cooling system works.



WHY WATER-COOL

The main advantage of water-cooling your PC is lower temperatures, reducing the temperature of chips can help you achieve higher clock speeds and stability when overclocking. As well as the superior cooling watercooling offers reduced noise levels and great aesthetics.

Not all water-cooling is the same, in a recently published product review an XSPC kit performed 15°C better than a high end air cooler. In comparison CoolIT, NorthQ, Coolermaster and Thermaltake kits performed over 20°C worse than the air cooler, a difference of over 35°C.



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ON TEST

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Canon HF100
- 99** Hitachi DZ-BD7HE
JVC GZ-HD40EX
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Editor's Choice

'HD video can look impressive on an HD screen. Make the wrong choice of camcorder, however, and the results can be disappointing'

High-def in your hand

High-definition camcorders are more affordable than ever, but that doesn't mean they're any easier to buy. Jonathan Parkyn helps to ease the agony of choice

It wasn't too long ago when shopping for a camcorder was relatively simple. One format – miniDV tape – reigned supreme, which meant that all prospective punters really had to consider was what features they were after and how much they wanted to spend. Now, however, the high-definition era has not only brought new levels of picture and sound quality, but it has also blown the doors wide open in terms of recording formats, storage media and image-capturing technology.

Where it used to be cassette or nothing, now disc, HDD and solid-state memory-based models are all vying for a piece of the market, while poor old miniDV clings on for dear life in its new guise as HDV.

Although HD has raised the bar in terms of resolution and detail, the technology has also

introduced its own issues: compression rates, image resolution and new connectivity options must all be taken into account before committing to a purchase.

In fact, in the absence of any major high-definition broadcast TV rollout, an HD camcorder can be one of the better ways of taking advantage of that HD-ready telly you've already purchased. When it's good, HD video can look genuinely impressive played back on an HD screen. Make the wrong choice of camcorder model, format or resolution, however, and the results can be deeply disappointing.

With all that in mind, we've rounded up eight of the latest HD camcorders and tested them for image quality, ease of use and value for money. Turn over to discover which is the best for you.

Canon HV30

Price £700 **Contact** Canon 08705 143 723 www.canon.co.uk



The lone HDV model in our group test, Canon's HV30 uses regular miniDV tapes but records to them at a higher resolution than standard-definition DV camcorders. It's also the only camcorder in this test to feature the same digital in/out connection (Firewire) as older DV camcorders, in addition to direct HDMI and component output for HD-Ready TVs.

The HV30's reliance on tapes has the unfortunate effect of increasing the size of the unit. Indeed, it was

the second-largest device in our test, thanks to the added bulk of the cassette transport, which spoils an otherwise fairly stylish design by looking a little like it was bolted on to the side as an afterthought.

One of the better-equipped camcorders in terms of features, the HV30's body is littered with buttons, sockets and hidden flaps. Included are a number of features that are likely to be on many video enthusiasts' checklists, such as a manual focus wheel, an optical image stabiliser (rather than an inferior electronic one), viewfinder and manual audio level controls. However, operation is straightforward and menu navigation is easy to get to grips with, thanks to a well-positioned, five-way joystick.

Tape may seem like a dated storage medium compared with many of the memory and disc-based alternatives on offer here and, indeed, it does have its share of technical drawbacks (see The format question, page 106). None of these, however, has any impact on the HV30's picture quality; outside or indoors, the device gave sumptuously rich colours with virtually no bleed, crisp edges and beautifully smooth motion, making this the best performer on test.

As a bonus, it features a 25p progressive mode, which, although technically less detailed than standard 60i HDV mode, lends footage a cinematic feel.



Verdict

Pros Fantastic picture quality; good manual controls; easy to edit footage

Cons Bulky design; tape recording media

Overall If HD picture quality is paramount, you'll want the MV30, despite the drawbacks of its retro recording format

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Canon HF100

Price £600 **Contact** Canon 08705 143 723 www.canon.co.uk



Smaller, lighter and somewhat less busy looking than its HDV cousin (see review above), the Canon HF100 has a smart, if slightly boxy, design that fits snugly in the palm of your hand. There's no room for a viewfinder, so framing of shots needs to be done entirely on the 2.7in LCD screen, potentially wasting valuable battery life.

The HF100 records high-definition video directly to memory cards in AVCHD format and an SD or

SDHC-shaped slot is easily accessible underneath the foldout display. Given that it has no built-in hard disk, tape chassis or disc drive, the device is surprisingly heavy compared with equivalent solid-state models.

The HF100 shares many of the HV30's stand-out features – the optical image stabiliser, 25p progressive mode – and even improves in some areas, such as its 12x optical zoom. It's also easy to use, with an intuitive menu interface. There's no internal storage, so unless you get a special deal, you'll need to factor in the cost of a good-sized memory card or two (about 2GB per 15 minutes). It's also worth noting that the HF100 won't record at top quality to certain types of SD media; our test model refused to film at 1,920x1,080 resolution on any card labelled 'Class 2'.

With the right media in place, however, results are impressive. Detail in the recorded image is high and the picture is sharp both outdoors and in low-lit conditions, possibly thanks to an above average bit rate (17Mbps/sec). In terms of colour, the HF100 was one of the stronger performers in this test, although we noticed a tendency towards pinkish reds, while the auto-white balance setting rendered the image in a slightly blue tint. If we were being picky, we would also mention the slight shimmering/blurring effect produced by even relatively moderate camera movements.

Verdict

Pros Compact design; long zoom lens; good-quality images

Cons Choosy about SD media; no viewfinder; minor motion issues

Overall Lacks the polish that advanced users might expect, but the HF100 is an impressive device nonetheless

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall: ★★★★★

Hitachi DZ-BD7HE

Price £800 **Contact** Hitachi 01628 643 000 www.hitachidigitalmedia.com



Right at the very cutting edge of technology, the Hitachi DZ-BD7HE features not one, but three storage options. Both the built-in 30GB hard disk and recordable Blu-ray drive can be used for video recordings – a flip of the Mode trigger switches between the two (although switching to Blu-ray is accompanied by a lengthy 'Disc Access' pause).

Recordings made on the HDD can be dubbed straight to 7.5GB 8cm BD-R/RE discs and standard-

definition video can be recorded to blank DVDs. An SD card slot is present, but this is reserved for still images.

The first thing you're likely to notice about the DZ-BD7HE, however, is its unusual appearance. There's no getting round the fact that Hitachi's camcorder is a monster. It's by far the biggest device in our test and its designers seem to have struggled somewhat to incorporate both drives. The unit feels unbalanced in the hand and some of the buttons are located in slightly awkward places on the unit's body. In fact, the DZ-BD7HE is almost precisely the wrong shape and size to be used comfortably for any length of time.

In bright exterior conditions, the DZ-BD7HE performs well. Colours are slightly over-saturated on both auto and manual white balance, but detail is good and motion isn't bad. Indoors, however, it's a different story: a lot of grain is introduced in low lighting, presumably as a side effect of the automatic gain increase, which is also evident by the slightly woozy effect it has on motion.

Its price and features make it a likely target for the early adopters and, assuming Blu-ray is here to stay, it's neatly future-proofed. But the DZ-BD7HE will probably appeal less to both casual users, who may find it slightly unwieldy to operate, and to video enthusiasts, for whom top image quality is paramount – whatever the lighting conditions.

Verdict

Pros Multiple recording options; HDMI cable included

Cons Slow operation; confusing disc compatibility issues; weak indoor performance

Overall As intriguing as Hitachi's Blu-ray camcorder first seems, the DZ-BD7HE never quite lives up performance-wise

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

JVC GZ-HD40EX

Price £950 **Contact** JVC 0870 330 5000 www.jvc.co.uk



JVC – which once bragged about inventing VHS – has finally caught up with the likes of Sony and Panasonic by introducing an AVCHD camcorder to its range. In fact, the GZ-HD40EX can switch between AVCHD and MPEG2 recordings at will – a neat trick that doesn't seem to have been replicated by any other manufacturer. Choosing AVCHD allows you to save on storage space, while the lower compression rates of MPEG2 can produce better pictures, but take up more

room on the internal hard disk. Not that you'd have to worry much about keeping an eye on disk space; the GZ-HD40EX houses a whopping 120GB miniature drive – room enough for about 600 minutes at top MPEG2 quality or 900 minutes of AVCHD. On top of that, the GZ-HD40EX will record HD-quality video to microSD card, too, so you need never get caught short.

To look at the GZ-HD40EX's compact design, you wouldn't have thought JVC had managed to squeeze in a hard disk. The unit is only marginally larger than the HDD-free Canon HF100, with only the battery jutting out at the rear to give the game away. Naturally, the inclusion of that much internal storage means the GZ-HD40EX is a little heavier than average, but not uncomfortably so.

Picture quality is better when using the less severely compressed MPEG2 setting. The overall image is marginally softer, with a much better gradient of colour and lower levels of noticeable compression grain in areas of solid colour. Contrast levels, on the other hand, seem slightly better using AVCHD. In either case, you're unlikely to be disappointed in strong lighting conditions. Low-light filming, however, introduces noticeable motion issues if the auto gain or manual shutter speed settings are used to compensate. The high price and fiddly menu system are further disincentives.

Verdict

Pros Vast internal storage; expandable via SD card; excellent MPEG2 performance

Cons No viewfinder; poorly implemented user interface; expensive

Overall Even taking into account the built-in storage, the GZ-HD40EX is let down by a couple of minor weaknesses

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Panasonic HDC-SD9EB

Price £450 **Contact** Panasonic 08705 357 357 www.panasonic.co.uk



The HDC-SD9EB's forefather – Panasonic's SD1 – was considered by many to be the best of the early AVCHD memory card camcorders and, to all intents and purposes, the SD9 is a shrunk-down version of the same model, with a few extra bells and whistles thrown in for good measure.

Those bells include full 1,920x1,080 resolution HD (compared with the SD1's 1,440x1,080 image) and high bit rate recordings, while additional whistles

include a 25 frames per second progressive mode, not unlike that of the Canon models reviewed on page 98.

As per previous iterations, Panasonic has stuck with the older CCD type of sensor, rather than the more modern CMOS technology preferred by many of its rivals. Not to be outdone, however, the company has crammed in three small (1/6in) CCD chips instead of a single sensor, so red, green and blue colour signals can be received and processed separately.

Colours appear rich, but sometimes almost too rich. Although pleasing on the eye, the sumptuous colours offered by the SD9 are, sadly, not particularly realistic, offering a kind of rosy-tinted view of the world. Deep reds, in particular, suffer in this respect, with a higher than average level of saturation evident in high-contrast situations. Indoor colours remain strong, but graininess appears in lower lighting conditions.

On the plus-side, a decent selection of manual controls and a simple menu scheme mean enthusiasts can have fun tinkering with the image to get it right. In addition, an optical image stabiliser, Dolby Digital 5.1 surround-sound and the surprisingly ungimmicky Face Detection and Intelligent Shooting Guide features help make the SD9 a cracking camcorder for the money. It's not perfect, but nothing else comes close at this end of the price spectrum.

Verdict

Pros Small and light; tons of useful features; strong colours

Cons Grainy in low light; no viewfinder

Overall It's hard to believe Panasonic has crammed in so much at such a low price

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Sanyo Xacti VPC-HD1000

Price £400 **Contact** Sanyo 01923 246 363 www.sanyo.co.uk



The distinctive phaser gun-shaped design is something Sanyo came up with several Xactis ago and has stuck with ever since. And why not? It's a pleasingly retro look that also has practical benefits. The VPC-HD1000 is small, light and easy to hold. Most of its main operations can be carried out by a thumb press or two, and the buttons are big and easy to use.

Despite its size, the Xacti's box comes full of cables, adapters and accessories, including an HDMI lead (apart

from the Hitachi DZ-BD7HE, Sanyo's camcorder was the only model in this test to provide such a thing) and a handy dock that features all the camera's output sockets.

In Simple mode, the VPC-HD1000 is just that; make a couple of selections regarding basic settings and then go to work. Full Auto makes it possible to film without having to fiddle with any settings – at least it would if the auto functions worked satisfactorily. The auto focus feature, for example, struggles to keep up, even with quite slow pans. Auto white balance leaves colours disappointingly muted, even in good exterior light.

Overall, the picture isn't quite as sharp as we'd have liked and the phenomenon of pixellation during panning is noticeably worse than similar effects we noticed elsewhere in our tests. Indoors, image quality suffers even more, as detail was quickly replaced by grain.

Given the device's much touted four-megapixel still photo feature (up to eight-megapixel with software assistance), it's clear that Sanyo is trying to position the Xacti as a dual-purpose device. Despite our criticisms, the VPC-HD1000 produces much better photos and HD video than any of its predecessors, while maintaining a competitive price. A few quid more, however, will ultimately get you a more grown-up camcorder that might be marginally less portable, but won't compromise quite as much on picture quality.

Verdict

Pros Very easy to use; small and light; high-resolution still images

Cons Uneven performance; slow auto focus; no viewfinder

Overall The dictionary definition of 'point and shoot', Sanyo's camcorder guns for the best of both worlds, but falls short of its ambitions

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall: ★★★★★

Sony HDR-UX19E

Price £700 **Contact** Sony 08705 111 999 www.sony.co.uk



Sony has been at the forefront of consumer – and broadcast – video technology from the word go. Its current favourite buzzword is 'hybrid', which conjures up the image of a hideous genetic experiment gone wrong. In fact, the term is used to describe the way some models in its current range straddle multiple formats or incorporate several storage options.

The HDR-UX19E's distinctive tall, rounded appearance gives away the fact that it can record video

straight to DVD. In fact, it goes one better than that – recording to disc in high-definition AVCHD as well as standard DVD quality. This basically means the camcorder can produce mini Blu-ray discs, although you can't fit much HD footage on an 8cm disc – about 11 minutes for a single-layer DVD, 21 for a DL disc.

The limitations of the DVD format shouldn't be much to worry about, though. Sony's multi-tasker offers three ways to capture your recordings. In addition to blank discs, you can save to the unit's internal memory (8GB) and, if you happen to have a large enough Memory Stick Pro Duo handy, to a removable card too.

Rather than rest on its laurels, the HDR-UX19E ups the technical ante with a Carl Zeiss 15x optical zoom lens – the longest on test – as well as Dolby Digital 5.1 surround sound, an easy-to-use touchscreen menu system and reliable optical image stabiliser, all of which results in a versatile, desirable camcorder.

To top it all, the HDR-UX19E offers exceptional performance. Perhaps due to a high (16Mbps/sec) bit rate, the unit can reproduce stunningly vivid – yet entirely realistic – colours, beautifully crisp edges, jaw-dropping detail and the least amount of motion blur we've seen on an AVCHD camcorder yet. It even does much better than most in low lighting conditions.

Verdict

Pros Three storage options; long

zoom; excellent picture quality

Cons Slightly awkward shape; DVDs don't hold much footage at top setting

Overall Versatile, easy to use and capable of filming stunning high-definition video, the HDR-UX19E is an unorthodox but welcome addition to Sony's range

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Sony HDR-TG3E

Price £500 **Contact** Sony 08705 111 999 www.sony.co.uk



You'd have to have a dark soul not to appreciate the look of Sony's minuscule HDR-TG3E. All brushed aluminium and sharp edges, its design harks back to the old look of the company's mid-1990s pocket-friendly miniDV range, its extremely small size made possible thanks in part to the small Memory Stick Pro Duo media it records to.

Despite being the smallest, slimmest and lightest device in our test, the TG3E incorporates the same sized

CMOS sensor and high bit rate 1,920x1,080 recording as the HDR-UX19E (see above). This means it inherits many of its big brother's better attributes.

Under the right conditions, for example, image quality is excellent; in outdoor light colours are bright and vivid, and the picture is as sharp as you'd expect from a model three times its size.

The diminutive device also features Sony's easy touchscreen menu system, which minimises the need for physical buttons. Unlike other menu-driven camcorders, manual camera control is easy to achieve using the on-screen options. The unit remembers which menu option you last accessed, so if, say, you're experimenting with exposure levels, you can get straight back to the exposure control options with a single tap.

The TG3E sits well in the hand while filming, and controls, such as the clever zoom jog dial, are all within easy reach. A useful low-power 'Quick On' option means the unit is ready to record when you flip open the 2.7in LCD screen. We did, however, find that footage filmed looked a little jerkier than on other models, possibly revealing a downside to the ultra-compact unit's relative lack of weightiness or perhaps highlighting a weakness of electronic image stabilisation. Also slightly disappointing was the auto focus, which seemed slow in low light, where grain also begins to creep in.

Verdict

Pros Eminently portable; easy to use;

Dolby Digital 5.1 sound

Cons Hard to eliminate camera shake; grainy in low light

Overall In terms of size and style, the HDR-TG3E wins hands down. A couple of performance issues spoil the fun, however

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Camcorders in close-up

Canon HV30

Manual focus wheel

Manual focus is sometimes available as a menu option. A proper focus ring or a hardware wheel such as this one is infinitely better

3.1-megapixel

Camcorders often claim to have multi-megapixel image sensors, but the full resolution is not used when recording video – only 1,920x1,080 (two-megapixels) is required for full HD

Photo button

Most camcorders have a snapshot button for taking photos, but rarely can performance match that of dedicated digital still cameras



Battery pack

Some camcorders only charge batteries when they're inside the unit. External chargers are preferable, since you can charge one battery while you use another

HDMI/Firewire sockets

An HDMI output is vital for showing off your work on an HD-Ready TV – Firewire output is becoming less common in HD camcorders

Sony HDR-UX19E

The viewfinder

Viewfinders are becoming rare on camcorders these days, but can be useful for conserving battery life compared with using the LCD screen

Accessory shoe

Accessory shoes come in two flavours – hot and cold. Hot shoes can pass an electrical current to power external microphones or video lamps

The DVD drive

DVD and Blu-ray camcorders use small 8cm recordable discs. These usually need to be finalised before they can be used in a set-top player



Super steady shot

Many models can boast an image stabiliser, but check the type before you buy; optical image stabilisers are preferable to electronic ones

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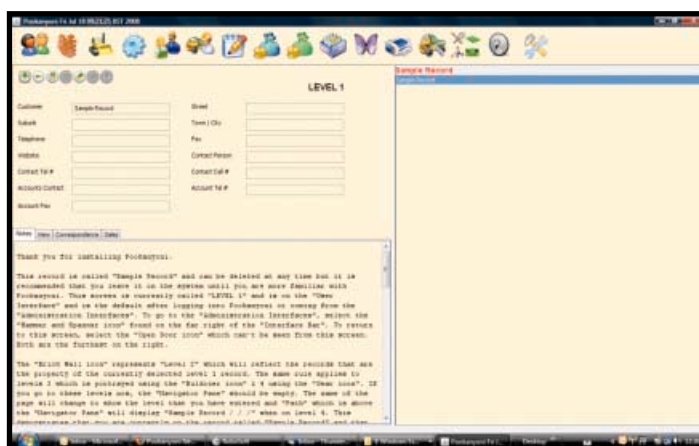
- Name Fields
- Change Field Representation (Text/Lookup/Boolean)
- Publish Fields for Data Capture
- Set Interface & Font Colours
- Change Languages at will
- Condition Time Intervals using "What If"
- Re-name User Screens
- Create record types in levels 3 & 4
- Prohibit undesirable Catalogue Imports
- Set Security Access & Permissions

Easily Viewed and Simple to Learn

- Standardised Layout
- Buttons for Quick Access & Security Lockdown
- Copy & Paste all fields comprising the Record
- Transfer records complete with allocated invoiced values
- Capture Screens separated from Administration Screens
- Path above Navigator Pane
- Select & View Records Throughout
- “Find” a value in the Tables
- “Show Me” to create Activities that are Due
- View Records within Defined Time Frames
- Descriptor Fields to aid revealing Alike Records
- Insert Images / Document / Files
- Calculate Depreciation
- Create / Merge / Split Activity Cards
- Create, Edit & Allocate Invoices
- Express Expenses as either Maintenance or Capital
- Create and Export Digital Catalogues in moments

Typical Applications

- Planned Maintenance
- Hobbies
- Wildlife Research & Conservation
- Asset / Insurance Register
- Health & Fitness Performance
- Animal, Bird & Fish Breeding Programs
- Sports & Music Enthusiasts
- Providing Catalogues
- Tracking Academic Performances
- Recording Sports Persons and their Performances
- Maternity
- Insurance
- Gardening
- Renovation

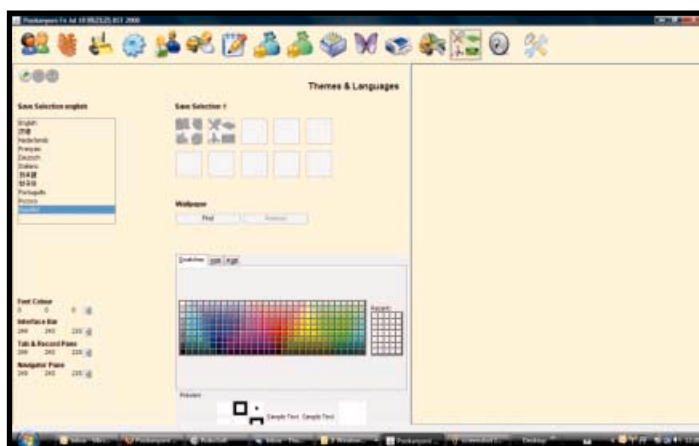


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HD camcorders

				
MANUFACTURER	CANON	CANON	HITACHI	
Model	HV30	HF100	DZ-BD7HE	
Approximate price	£700	£600	£800	
Telephone	08705 143 723	08705 143 723	01628 643 000	
URL	www.canon.co.uk	www.canon.co.uk	www.hitachidigitalmedia.com	
SPECIFICATIONS				
Recording format	HDV	AVCHD	BD-R, BD-RE	
HD resolution	1,440x1,080	1,920x1,080	1,920x1,080	
Optical zoom	10x	12x	10x	
Internal storage	N/A	N/A	30GB HDD	
Memory card slot	Mini SD	SDHC	SD	
LCD screen size	2.7in	2.7in	2.7in	
Image sensor	1/2.7in CMOS	1/3.2in CMOS	1/2.8in CMOS	
HDMI	✓	✓	✓	
USB	✓	✓	✓	
A/V out	✓	✓	✓	
Component out	✓	✓	✗	
A/V in	✓	✗	✗	
Audio	HDV (MPEG1 Audio Layer II) 2-channel	Dolby Digital (AC-3) 2-channel	Dolby Digital 2-channel	
Photo mode	✓	✓	✓	
Max photo resolution	2,048x1,536	2,048x1,536	2,400x1,800	
Pictbridge	✓	✓	✗	
Image stabiliser	Optical	Optical	Electronic	
Accessory shoe	✓	✓	✓	
Remote control	✓	✓	✓	
Video light/flash	✓	✓	✓	
Warranty	1 year	1 year	1 year	
Dimensions (wxhxd)	88x82x138mm	73x64x129mm	83x87x166mm	
Weight	535g	380g	630g	
SCORES				
Build quality	★★★★★	★★★★★	★★★★★	
Ease of use	★★★★★	★★★★★	★★★★★	
Features	★★★★★	★★★★★	★★★★★	
Performance	★★★★★	★★★★★	★★★★★	
Value for money	★★★★★	★★★★★	★★★★★	
OVERALL	★★★★★	★★★★★	★★★★★	

				
JVC	PANASONIC	SANYO	SONY	SONY
GZ-HD40EX	HDC-SD9EB	Xacti VPC-HD1000	HDR-UX19E	HDR-TG3E
£950	£450	£400	£700	£500
0870 330 5000	08705 357 357	01923 246 363	08705 111 999	08705 111 999
www.jvc.co.uk	www.panasonic.co.uk	www.sanyo.co.uk	www.sony.co.uk	www.sony.co.uk
AVCHD	AVCHD	MPEG-4 AVC/H.264	AVCHD	AVCHD
1,920x1,080	1,920x1,080	1,920x1,080	1,920x1,080	1,920x1,080
10x	10x	10x	15x	10x
120GB HDD	N/A	N/A	8GB Flash memory	N/A
MicroSD	SDHC	SDHC	Memory Stick	Memory Stick Pro Duo
2.8in	2.7in	2.7in	2.7in	2.7in
1/3in CMOS	1/6in CCD x 3	1/2.5in CMOS	1/5in CMOS	1/5in CMOS
✓	✓	✓	✓	✓
✓	✓	✓	✓	✓
✓	✓	✓	✓	✓
✓	✓	✓	✓	✓
✗	✗	✗	✗	✗
Dolby Digital 2-channel	Dolby Digital 5.1-channel	MPEG-4 audio (AAC compression)	Dolby Digital 5.1-channel	Dolby Digital 5.1-channel
✓	✓	✓	✓	✓
2,432x1,368	1,920x1,080	3,264x2,448	2,304x1,728	2,304x1,728
✗	✓	✓	✓	✓
Electronic	Optical	Electronic	Optical	Electronic
✓	✗	✓	✓	✗
✓	✓	✓	✓	✗
✓	✓	Flash only	Flash only	Flash only
1 year	1 year	1 year	1 year	1 year
73x68x123mm	65x67x126mm	90x112.6x54.5mm	58x93x134mm	32x119x63mm
540g	275g	311g	470g	240g
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

The format question

There's no doubt that Flash memory is currently the most convenient consumer video storage format. Apart from helping to bring down the size and weight of the camcorder itself, solid state has no moving parts and therefore suffers from none of the physical problems associated with tape, disc or even hard disk alternatives.

Flash memory (and hard disk) camcorders also offer the potential benefit of smooth integration with PCs; transferring footage is a simple case of dragging and dropping the raw data files from one device to another at fast USB2 speeds, compared with tape-based HDV format's real-time capture over Firewire.

Unfortunately, AVCHD – the preferred recording format for most Flash memory-based camcorders – can sometimes suffer from its own shortcomings. To edit – or even simply watch – AVCHD files on a computer, for instance, a surprisingly powerful system is required.

In our tests, we found that a 3GHz Pentium 4 computer couldn't produce anything like smooth playback of AVCHD files. Only when we moved to a dual-core PC were we able to achieve stutter-free motion, while most AVCHD-compatible video-editing applications recommend a quad-core system.

In contrast, HDV puts much less of a strain on a PC's resources and can be edited in native HD by a wide range of programs, including Windows Vista's version of Windows Movie Maker.

In many ways, AVCHD is technically superior to HDV; it uses a much newer, more efficient codec (H.264) to encode HD footage, (compared with HDV's MPEG2) and can record video at full HD resolution (1,920x1,080 pixels), whereas HDV only captures video at 1,440x1,080 and uses horizontal pixel stretching to achieve a 1080i resolution.

Judged side by side, however, most people would probably still agree that HDV currently has the edge in terms of perceived picture quality. The main reason for this is likely to be down to compression. HDV runs at a steady bit rate of around 25Mbps/sec, whereas the bit rate used by most consumer AVCHD camcorders is, on average, limited to around 15Mbps/sec.

Compression artefacts and poor handling of motion are often attributed to the format's lower bit rate. It's still early days for AVCHD, though, and the situation could easily improve over time, as manufacturers introduce newer H.264 camcorders with much higher bit rates.

Editor's Choice

Editor's Choice Canon HV30

Recommended Panasonic HDC-SD9EB • Sony HDR-UX19E



Canon HV30

Many readers will probably be surprised to see Canon's HV30 coming away with the Editor's Choice award. After all, it uses what many consider to be an obsolete recording format (tape), an older codec (MPEG2) and a lower resolution (1,440x1,080) – hardly a winning combination, you might think. But anyone who has had any experience with optics will understand that image quality is not always simply about the number of pixels or the type of compression techniques used.

We'll admit that the HV30's suitability is slightly more skewed to enthusiasts than to casual users, but we believe all the best models should make decent manual controls and advanced features available for those who



Panasonic HDC-SD9EB

want to experiment. We'll also happily concede that the HV30's slightly cumbersome shape makes it less easy to whip out and shoot than some of the more compact models, and that tape is a fussy – albeit familiar – format compared with Flash memory.

The fact of the matter is, Canon's consumer HDV camcorder has a clear lead over the other models in this test in terms of a straightforward like-for-like comparison of colour reproduction, detail, sharpness and motion handling – and all that comes at a very reasonable price.

The gap is narrowing, however. Newer HD formats, such as AVCHD, have built-in scalability, and it won't be long before camcorders that use such technology overtake HDV. Already, models such as Panasonic's



Sony HDR-UX19E

HDC-SD9EB and the Sony HDR-UX19E are catching up, thanks largely to increases in the bit rates used for 1,920x1,080-pixel AVCHD recording. These models also demonstrate some of the major benefits that newer video recording technologies offer in areas other than image quality.

Using a solid-state memory card as its recording medium, for example, has allowed Panasonic to keep the HDC-SD9EB's proportions to a minimum while maintaining an attractive feature set that includes Dolby Digital surround sound and an optical image stabiliser.

The multiple storage feature available to HDR-UX19E users, meanwhile, is perhaps an indication that, before long, the recording medium itself will become irrelevant. **PCW**

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ON TEST

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- Editor's Choice

'With memory card slots and support for Pictbridge, you can print directly from your camera, without using PC-based imaging software'

Prints and the paupers

Perfect for the home or small office, an MFD combines printer, scanner and copier. Paul Monckton looks at the latest crop

Multifunction devices (MFDs) are incredibly convenient. These days it's rare for anyone but the fussiest imaging fan to buy a separate printer and scanner. Space-saving considerations aside, an MFD provides a high level of integration, both in terms of the hardware and supporting software.

Not least, you now have a home colour photocopier, and all your printing and scanning tasks can be managed from a single piece of software.

To the photographer, the MFD offers an additional layer of convenience. You can use it to enlarge or reduce photos and in some cases print directly from negatives – all without needing to turn on your PC.

With memory card slots and support for Pictbridge, you can print directly from your camera, without the need for PC-based imaging

software, and image-enhancement options such as red-eye removal are often built into the MFD.

Beyond basic printing and scanning, the latest models often include the ability to print directly onto DVD, and more expensive ones may even have DVD burners built in.

Bluetooth interfaces are also common, and with mobile phones including increasingly good cameras, they're ideal for printing straight from your phone. And built-in Wifi networking is a boon for sharing your MFD at home or in the office.

We asked the biggest manufacturers to submit an MFD aimed at photo enthusiasts and received a range of products to suit all levels of experience – from the beginner to the more exacting needs of the enthusiast photographer. All were evaluated for speed, usability, print quality and running costs.

Canon Pixma MP610

Price £139 Contact Canon www.canon.co.uk



The Canon produces some of the best-looking prints available at this price

Canon's Pixma MP610 is a powerful, multifunctional printer that delivers an unbeatable combination of performance and quality. It's superbly built: finished in black and silver, it appears at first to be a smooth, featureless box. No controls, slots or trays are visible until you open it up. At the front, a hinged panel reveals a centrally mounted LCD and a selection of control buttons. Input and output trays fold open front and rear, and a small door towards the side reveals a pair of memory card slots. This design protects the printer when not in use and keeps dust well away from its internal components.

The top of the device, including the control panel, forms the lid to the scanner, leaving no obstructions to placing large documents such as books on the flatbed.

There's nothing fragile or flimsy in its construction. The doors and panels clunk satisfyingly into place and the overall feel is of expensive reliability – this goes some way to explaining why it weighs almost twice as much as competitive models from Epson and Kodak.

The Pixma MP610 is also blisteringly fast. Whatever content we threw at it, pages came out faster and generally looked better than those from any other printer. Scanning and copying was also fast.

Don't let the manufacturer's quoted print speeds fool you – although all the MFDs on test have roughly similar speed ratings, in many of our tests the Pixma was about twice as fast as the slowest performing competitor.

When it comes to ease of use, Canon takes a slightly different approach from HP and Kodak. Software and ink installation is straightforward, and the front panel interface is clear and intuitive.

However, where HP's Photosmart C8180 will bombard you with hints and tips like a friendly assistant,

the Canon behaves much more like a machine where you are expected to be in control and take the initiative.

If you know little about how to print a photo or scan a document, you might possibly be better off with the Photosmart C8180 or a highly automated device, such as Kodak's ESP 5. However, if you know what you want to do, the Pixma MP610 makes it easy to find the controls and options you need without getting in the way with unwanted help. However, all the help and support you need is available in the form of a searchable manual and comprehensive software bundle.

If you're a keen amateur photographer, then this MFD is sure to appeal. Not only does it produce some of the best-looking prints available at this price, it can also print them faster than the competition. If you're going to print out the contents of a camera memory card, the time savings are immense.

Copying is made easy by the presence of discrete mono and colour copy buttons that let you make instant copies without the need to enter the system menus and fiddle with options.

The use of pigment ink results in resilient, water-resistant prints that can be passed around and handled without the risk of smudging. The five separate ink tanks ensure that every drop of ink you buy will end up on the printed page rather than being wasted in a multicolour cartridge as your coloured inks are exhausted at different times.

Although it can't match the low running costs of Kodak's ESP 5, ink costs work out lower than those of Epson, HP and Lexmark.

For the demanding user who won't compromise on performance and quality, the Canon Pixma MP610 is a compelling choice.

Verdict

Pros High-quality prints; very fast; DVD printing; low running costs

Cons Slightly less user friendly

Overall Best for performance and quality, the Canon Pixma MP610 is almost unbeatable

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Epson Stylus Photo SX400

Price £119.99 **Contact** Epson www.epson.co.uk



A budget printer with software that caters to all levels of experience

As the lowest-priced MFD of the group, the Stylus Photo SX400 is an attractive budget option. It provides a solid but basic set of features and is easy to use, thanks in no small part to the supplied software package.

Epson's software bundle has a rather lengthy but fully automated installation that requires minimal user intervention. It includes Epson Easy Photo Print, which helps you achieve the best possible prints by providing automatic corrections and enhancements such as red-eye removal. Epson Web-To-Page is designed to help you print web pages easily, and Epson File Manager helps you keep track of all your photos and scanned documents, as well as providing direct access to the scanner. Optical character recognition facilities are provided by Abbyy Fine Reader 6.0 Sprint Plus for Windows.

The software caters to everyone's needs, regardless of their level of experience. For example, the scanner driver offers a fully automatic mode for beginners, a home mode for advanced amateurs and a professional mode for experts, so users can pick the balance of automation and control they need.

In its most automated mode the scanner will detect the kind of document being scanned, whether it's a photograph or text document, and then select the correct resolution and scanning options for you. In home user mode you get a selection of options to help you improve your scans, including colour restoration, backlight correction and dust removal.

Switching to the most advanced mode adds high-end image-editing controls such as histograms and tone corrections. Similarly, the printer driver offers a selection of quick shortcuts tailored to specific types of print, while also offering full manual control for experts.

Epson's pigment inks provide excellent resilience and longevity and were immune to our water spray test. The photo paper did not curl and virtually no indentations were left by the peg we used to hang it up. However, the print image quality can't match that of the more expensive printers. While colours are rich and realistic, and skin tones appear natural, there's always a small amount of graininess marring what would otherwise be a very good print. The results are still clearly better than those of the more expensive Lexmark X4875.

Curiously, when printing from a memory card using the front panel, we were only able to select standard-quality output, with higher quality modes unavailable.

Running costs are quite high. The SX400 uses four separate ink tanks to help cut down on waste and these are priced slightly lower than the competition, but the page yields are relatively low, meaning you'll have to replace them more often.

Unless you intend to print relatively few photos, saving on your purchase price by choosing the SX400 may prove to be a false economy in the long run. Kodak's ESP 5 is just as easy to use and offers better-quality prints at a fraction of the running costs.

In terms of speed, the SX400 isn't very fast. For day-to-day monochrome document printing it's beaten by the competition, although it does fare somewhat better when printing slightly more complex colour pages. It's also quite quick to get going, meaning single-page documents will often print faster than on other MFDs, although they soon catch up and overtake the Epson once they hit their stride.

This is a budget MFD with budget performance, but it's lifted out of the ordinary by its excellent software and ease of use.

Verdict

Pros Ease of use; price; durable prints; good software support

Cons Performance; image quality

Overall Low purchase price is offset by higher running costs. Unimpressive performance and average image quality, but easy to use

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Kodak ESP 5

Price £129.99 **Contact** Kodak www.kodak.co.uk



The paper handling tray is awkward and takes up space, but print quality is excellent

When Kodak first introduced a range of all-in-one photo printers, it was a mini revolution. Everyone knew ink prices were too high, but Kodak had the guts to slash them. In one fell swoop, printing costs were halved.

Kodak's latest model, the ESP 5, continues the trend. Using the same supplies as the previous models, ink costs are still well below those of the competition.

Even when you consider that all five inks are supplied in just one pair of cartridges, often cited as wasteful and expensive, a Kodak print is likely to cost less than half what you will have to pay for an equivalent print from another manufacturer. And you can buy a full set of replacement inks for only £17.

Despite the low cost, Kodak's prints are very high quality. They produced quite neutral tones, lacking some of the punch of those from HP or Canon, but they were considerably better than those from Epson, and head and shoulders above those of Lexmark's X4875. They're also durable and water-resistant.

With photos, we found we were able to get better-looking prints by printing from the PC rather than directly from the printer using a memory card.

The ESP 5 is a smart-looking printer with gentle curves and comes in glossy black with the obligatory Kodak-yellow stripe. All controls are placed down the right-hand side, along with a pair of memory card slots and a Pictbridge-compatible USB port.

A larger than average LCD panel is controlled by a selection of buttons which are a little small. The user interface is quite text-heavy when compared with some of the friendly, icon-driven systems we've seen from Canon and HP. Thankfully, the printer is easy to use because nearly everything is automated, so you

won't have to use the menus much anyway. For example, the printer detects the kind of paper you're using and configures itself accordingly. This saves time with every print as there's nothing to select or verify.

Kodak's Easysshare software is equally easy to use. It's low in complicated options, but high in help and automation. Features such as red-eye removal and automatic colour restoration give instantly pleasing results, but advanced users may miss the level of control usually found in advanced options.

The paper handling on the ESP 5 is a little unusual. The pages are fed in and out from the front of the device in a U-shaped path. Ejected pages simply fall on top of your pile of input sheets.

This approach makes it easy to load paper without having to reach round to the back of the printer, and it avoids dust and other foreign objects falling directly into it, but it takes up considerably more space. If you don't want to load your paper tray each time you use the printer you'll have to leave it protruding a long way from the front. A top-loading system results in a much smaller desktop footprint.

While it produces great low-cost prints, the ESP 5 isn't fast. When printing directly from a memory card, it took almost three minutes to print our test image at 10x15cm – by contrast the Canon MP610 completed the task in 74 seconds. Printing general A4 documents is also a little sluggish, especially when printing colour PDF documents. Scanning, however, is rather quicker, which helps offset the slower printing time when it comes to photocopying, bringing performance back into line with the rest of the field.

If you print a lot of photos, the ESP 5 is an excellent way to save money without compromising on quality.

Verdict

Pros Low running costs; print quality; ease of use

Cons Print speed; lack of advanced options

Overall Very low running costs put the ESP 5 well ahead of the competition

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

HP Photosmart C8180

Price £298.45 Contact HP www.hp.com



Under the scanner lid is an adapter that allows users to scan negatives and transparencies

At more than double the price of any other MFD in this group test, you'd be justified in expecting something a bit special from HP's Photosmart C8180. Thankfully, that's exactly what you get. It's by far the best-connected of the bunch, works effortlessly with or without a PC attached and can back up all your photos with minimal effort.

In addition to the usual PC USB connection, Pictbridge and memory card support, you get wired and wireless networking as standard. This means you'll be able to hook it up to just about anything capable of storing digital photos, whether or not you have a PC available. If you're a camera phone enthusiast, you'll be able to print your pictures directly from your phone via the printer's built-in Bluetooth interface.

What's more, the built-in DVD burner lets you back up all your pictures directly to disc – again, without the need for a PC connection. And for those of us with PCs, the DVD drive can be shared over your network as easily as the printer itself. The C8180 doesn't print directly onto printable discs, but instead uses Lightscribe technology to burn monochrome images and text directly onto the top surface of compatible discs.

Its large 8.9cm touchscreen dwarfs the competition, not only improving clarity and readability but also providing space for your fingers to operate its touchscreen interface.

There are advantages to this MFD that go beyond its long list of features. Alongside the Pixma MP610, the Photosmart C8180 has superior build quality. Like Canon's product, the Photosmart's scanner lid covers the whole of the top of the unit, meaning larger documents and books aren't obstructed by a side-mounted control panel.

Hidden under the scanner lid is an adapter allowing you to scan film negatives and transparencies – turning your printer into a complete system for printing photographs from any source. You can also use it to convert and archive your negatives straight to disc.

HP's software support is also very good. Despite the huge complexity of the product, great care has been taken to provide you with an environment in which help and ideas are always at hand. It's jam-packed with useful functions too numerous to list here. For example, if you want a sheet of graph or music manuscript paper for school, the printer will create one for you. This device does so much that if we could, we would give it a seven out of five for features.

The C8180 brings with it a whole world of HP's guidance and expertise, which is great for the beginner but can become intrusive for the expert. For example, the LCD screen is usually used for helpful information and menus, but is occasionally turned into what is, in effect, an opportunity for HP to advertise.

Though not the fastest printer in the group, performance is generally good, although printing a single image directly from the memory card slot was a little slow at just over two minutes. The C8180 is not only multifunctional, but also multitasking; it can scan documents to your PC at the same time as printing.

Print quality is excellent, jostling with the Canon MP610 for first place, depending on the kind of images you're printing. However, one area where it does lose out is in the durability of the prints, which are susceptible to moisture, although more resilient than those produced by Lexmark's X4875.

If you can afford it, the Photosmart C8180 is worth spending the extra money.

Verdict

Pros Good image quality; novel features; performance; Lightscribe DVD burner; film scanning

Cons High price

Overall An expensive but hugely impressive MFD. Very easy to use, with excellent quality and packed with useful features

Features	★★★★★
Performance	★★★★★
Value for money	★★★★★
Overall	★★★★★

Lexmark X4875

Price £149.99 **Contact** www.lexmark.co.uk



The LCD screen is small and feels slightly cramped as a result

Lexmark's x4875 has an impressive specification. Priced at £149.99, it includes automatic double-sided printing and built-in Wifi networking as standard. This means it can halve the amount of paper you use – a much greener option. The Wifi interface is perfect, not only for those who wish to share the printer among multiple PCs but also for those who simply hate wires. It's great for anyone who uses a laptop at home as the printer can be located anywhere there's a mains socket within reach.

However, while the X4875 may look good on paper, its photo prints do not. With our focus here on printing decent photos, it's a shame that this is one area where the X4875 performs rather badly.

Here at PCW we're used to a bit of nit-picking when it comes to evaluating quality. None was required here: the X4875's prints were obviously inferior to any other. To be fair, they're still quite passable photos and, if you had seen them in isolation without reference to anything better, you may well be satisfied with them, but they don't compare favourably against the competition in this group test.

The prints didn't fare any better in our water spray test, either. While HP's C8180 was susceptible to some bleeding, the situation with the X4875's prints was far worse. After just a few minutes most of our photo had left the paper and taken up residence in a puddle on the ground. These prints need to be kept well away from moisture.

All the MFDs in this group, including the X4875, offer memory card slots so you can print photos easily without having to use your PC at all. On the X4875, it's not that easy. Browsing photos on a memory card proved painfully slow, often taking more than 45

seconds to bring up a thumbnail. If you need to print multiple photos or adjust settings, this 45-second delay may occur several times before you get to print anything. So, while the time spent printing photos is less than that of the HP or Kodak printers, the total time you spend getting an image off your memory card and onto paper is much, much longer.

If you want to print more than the occasional snap we'd advise you to buy something other than the Lexmark X4875. However, the convenience of Wifi and double-sided printing make it a good choice for more general printing and black and white photocopying.

Software support comes in the form of the Lexmark Productivity Studio, Solution Center and Fax Solutions applications. The MFD itself doesn't include fax capability, but the software works in conjunction with your existing fax modem to provide it. Installation is simple and it takes you through all the required steps, including setting up your Wifi network, without the need to resort to manuals.

The Productivity Studio ties together common tasks in a single interface. It's easy to use, but not quite up to the standard of HP's similar offering. The Solution Center groups together support tasks such as integrated documentation, troubleshooting and network configuration.

The LCD screen is smaller than most and feels slightly cramped. The interface itself isn't tricky to navigate but it does involve reading quite small text menus. When idle, a demo loop is displayed, detailing the printers many features.

The X4875 represents good value for money and is a useful office tool, but really isn't the best choice as a device primarily to be used for printing photos.

Verdict

Pros Automatic double-sided printing; Wifi

Cons Poor print quality; frustrating memory card support

Overall Wifi and double-sided printing as standard make this a good printer for office tasks, but photo printing is disappointing

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

How we tested

The tests we performed covered the MFDs' performance in all areas

We ran our standard inkjet printer tests on each MFD featured in the group test, as well as speed tests for the scanning and copying functions. Our print tests included monochrome A4 documents printed from Microsoft Word, colour A4 PDF pages printed from Adobe Reader and 10x15cm photos printed from an SD memory card, inserted directly into each MFD's card slot.

We used the manufacturers' supplied inks for testing, using standard photocopier paper for the A4 documents and the manufacturers' own highest-quality photo paper for the photographic image tests. All tests were timed and output samples compared by our viewing panel.

The photographic samples were compared against calibrated originals provided with a Kodak professional colour-management checkup kit. When evaluating photo print quality we looked for colour accuracy, image contrast, graininess and any defects such as banding or uneven coverage.

Monochrome text quality was evaluated based on the depth of black ink, as well as the sharpness and clarity of fine text.

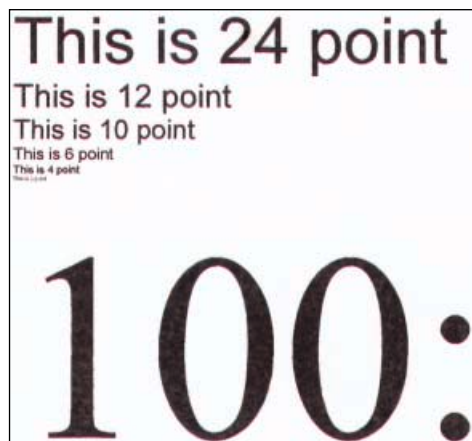
To test the prints' resistance to moisture, we clipped each 10x15cm print to a washing line with a clothes peg and sprayed them with 10 squirts of water from a handheld atomiser at a distance of 10cm. We then left the pages to re-dry before scanning.



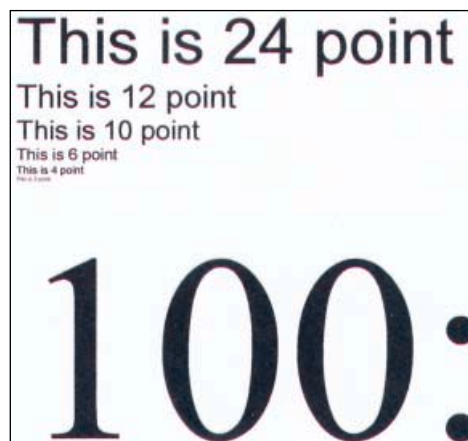
The Lexmark X4875 produced over-saturated colours, and there's a lot of image noise visible here in the sky



The HP Photosmart C8180 produced natural-looking colours and smooth gradients, with no grainy artefacts



Small text sizes here are fuzzy and the vertical edge of the number 1 is broken



Here, even the smallest point sizes are clearly legible and the straight lines remain unbroken



The prints from the HP Photosmart C8180 became blotchy and the ink smeared after our water test



There is almost no picture left on the Lexmark's print, such is the extent of the water damage



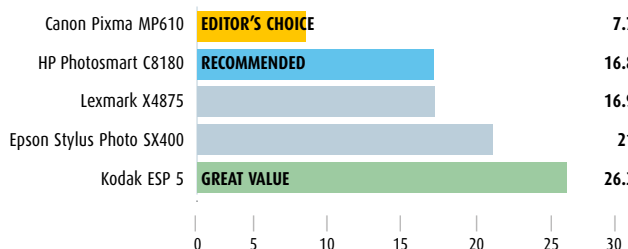
Printers using pigment-based inks show little or no damage from water

Lab results

Kodak's ESP 5 is consistently good value for money in all categories, however Canon's Pixma MP610 is well ahead in terms of performance, quality and speed

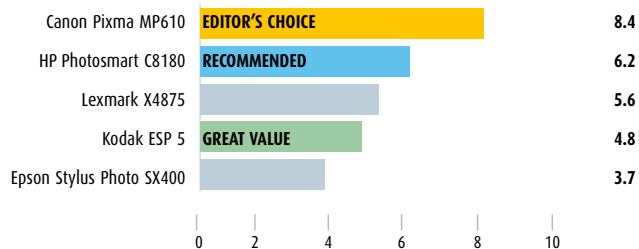
Time to first page, mono default quality (seconds)

Smaller is better



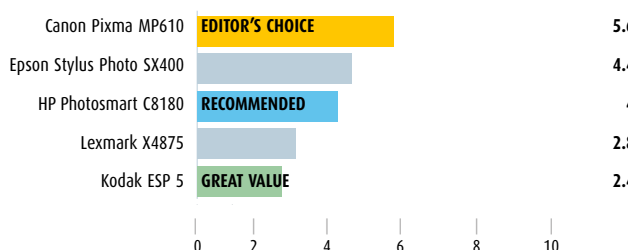
Pages per minute A4 mono, default quality

Bigger is better



Pages per minute, colour PDF, default quality

Bigger is better



Text quality (subjective score out of 5)

Bigger is better

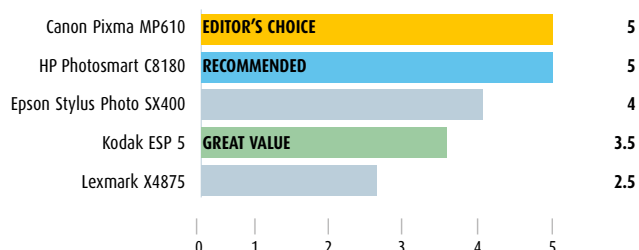
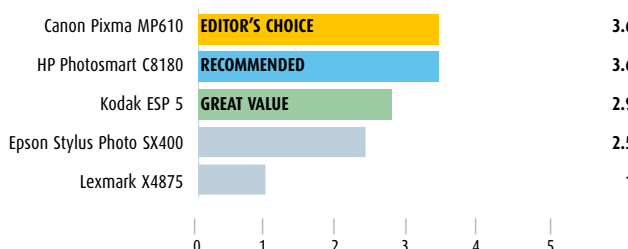


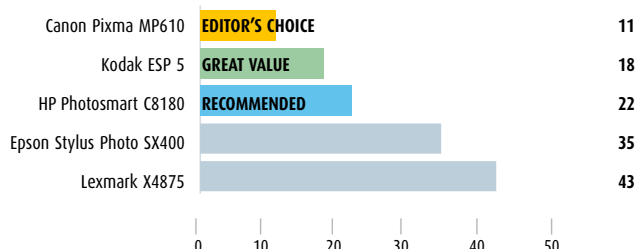
Photo quality (subjective score out of 5)

Bigger is better



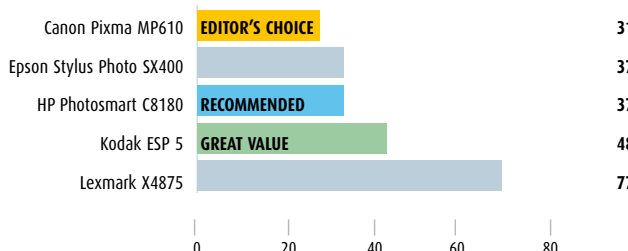
Time to scan an A4 page at max 300dpi (seconds)

Smaller is better



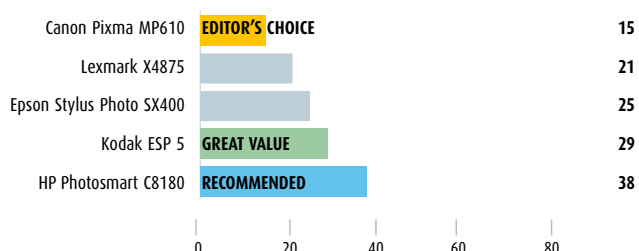
A4 colour copy speed, default quality (seconds)

Smaller is better



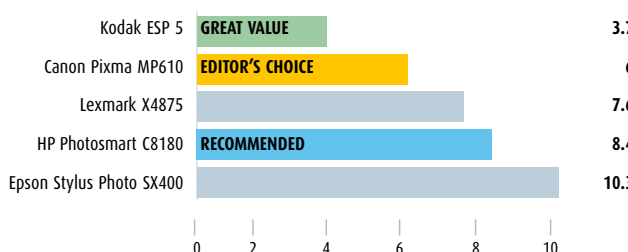
A4 mono copy speed, default quality (seconds)

Smaller is better



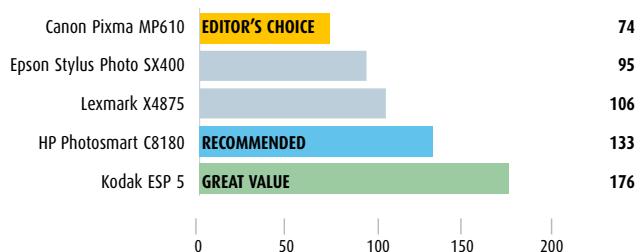
Ink cost per A4 ISO/IEC 24711/24712 page (pence)

Smaller is better



Time to print 10x15cm photo from memory card (secs)

Smaller is better



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Multifunction devices

			
MANUFACTURER	CANON	EPSON	
Model name	Pixma MP610	Stylus Photo SX400	
Price	£139	£119.99	
URL	www.canon.co.uk	www.epson.co.uk	
PRINTING			
Maximum print resolution (dpi)	9,600x2,400	5,760x1,440	
Number of cartridges (colours)	5 (5)	4 (4)	
Quoted max A4 print speed (mono/colour ppm)	31/24	34/34	
Input tray capacity	150x2	120	
Duplex	✓ - Auto	Manual	
Price of mono cartridge (pages at 5% coverage)	Pigment black £9.26 (505); Supplemental black £9.81 (5025)	£7.99 (245)	
Price of colour cartridge(s) (pages at 5% coverage)	Cyan £9.81(890); Yellow £9.81 (665); Magenta £9.81 (710)	Cyan £7.99 (375); Yellow £7.99 (405); Magenta £7.99 (270)	
SCANNING			
Optical scan resolution	4,800x9,600	2,400x1,200	
Colour depth internal/output	48/24	48/24	
Scanner technology	CIS	CIS	
OTHER SPECS			
Fax	✗	✗	
LCD size	6.2cm	6.3cm	
Card reader	Compact Flash, Memory Stick, Memory Stick Pro, Memory Stick Duo, Memory Stick Pro Duo, SD, SDHC, Mini SD, Micro SD, MMC, RS-MMC, MD, XD-Picture Card	Compact Flash (Memory card only), Microdrive, Memory Stick, Memory Stick Duo 3, Magic Gate Memory Stick, Magic Gate Memory Stick Duo 3, Memory Stick Pro, Memory Stick Pro Duo 3, SD, SDHC, Mini SD 3, Mini SDHC 3, Micro SD 3, Micro SDHC 3, Multimedia Card, XD-Picture Card, XD-Picture Card Type-M, XD-Picture Card Type-H	
USB connections	1 USB host; 1 USB device	1 USB host; 1 USB device	
Wireless/wired networking	Optional Bluetooth	✗	
Pictbridge compatible	✓	✓	
Power consumption in watts (standby/load)	2.5/19	3/12	
Included software	MP Navigator EX, Easy-Photo Print EX, Scansoft Omnipage SE (OCR software), Newsoft Presto Page Manager (Windows only), EPP EX for Mac: available for download from the Canon website	Epson Web-To-Page, Epson Easy Photo Print, Epson File Manager, Abbyy Fine Reader 6.0 Sprint Plus (PC), Abbyy Fine Reader 5.0 Sprint Plus (Mac)	
Dimensions in cm (wxdxh)	45x38.9x18.8	34.2x45x18.2	
Weight (kg)	10	5.9	
Standard warranty	1 year	1 year	
Windows compatibility	Windows Vista/Windows XP SP1, SP2/Windows 2000 Professional SP2, SP3, SP4	Windows 2000/XP/XP-x64/Vista	
Mac compatibility	Mac OSX 10.2.8-10.4	Mac OSX 10.3.9/10.4.x/10.5.x or later	
SCORES			
Features	★★★★★	★★★★★	
Performance	★★★★★	★★★★★	
Value for money	★★★★★	★★★★★	
OVERALL	★★★★★	★★★★★	

		
KODAK	HP	LEXMARK
ESP 5	Photosmart C8180	X4875
£129.99	£298.45	£149.99
www.kodak.co.uk	www.hp.co.uk	www.lexmark.co.uk
Not specified	9,600x9,600	4,800x2,400
2 (6)	6 (6)	2 (4)
30/29	34/33	30/27
100(A4)/30(Photo)	100(A4)/20(photo)	100 pages
Manual	Optional automatic	Automatic
Black 6.99 (378)	Black £11.75 or £23.50 (360 or 1180)	£13.78 or £17.23 (220 or 500)
5-colour 9.99 (536)	Cyan £8.23 (380); Yellow £8.23 (470); Magenta £8.23 (360); Light Cyan £8.23 (7200); Light Magenta £4.70 (6600)	£17.23 or £20.68 (205 or 500)
1,200	9,600x9,600	1,200x600
24/24	96/48	48/24
CIS	CIS	CIS
✗	✗	✗
7.6cm	8.9cm	6cm
SD, SDHC, Multimedia Card, Memory Stick, Memory Stick Pro, XD-Picture Card, Compact Flash Type I and II including Microdrives	Compact Flash, XD, SD/Multimedia Card, SDHC, HDMC, MMC Plus, Memory Stick, Memory Stick Pro, Memory Stick Duo, Memory Stick Pro Duo, with adapters (not provided, purchase separately): Mini SD, SD Micro, MMC Mobile, MS Micro	Compact Flash I & II, Sony Memory Stick, Memory Stick Pro, SD Card, Multimedia Card, Microdrive, XD Card, Sony Memory Stick Duo (with adapter), Mini Secure Digital Card (with adapter), Sony Memory Stick Pro Duo (with adapter), Sandisk Transflash Memory Module (with adapter), RS-MMC (with adapter), XD Card Type M, Type H Multimedia Card (MMC) Mobile (with adapter), Micro Secure Digital (Micro SD) Card (with adapter)
1 USB host; 1 USB device	1 USB host; 1 USB device	1 USB host; 1 USB device
✗	✓(11g)/✓	✓(11g)/✗
✓	✓	✓
6.2/6.2	7.2/36	Not specified
Kodak Easyshare	Microsoft Windows: HP Photosmart Essential Software, Roxio Creator Basic, Roxio Express Labeler, Roxio My DVD Basic, Roxio Easy Archive; Mac OSX: HP Photosmart Studio Software (supports CD/DVD printing), Lightscribe print driver	Lexmark Productivity Studio, Lexmark Solution Center, Lexmark Fax solutions
42.2x29.8x17.7	44.8x39.2x21.6	45.4x35.1x17.8
5.4	11.4	7.1
13 months	1 year	5 years
Windows XP (SP2 or above)/Vista	Microsoft Windows 2000 (SP3 or higher), XP Home, XP Professional, certified for Windows Vista; With Windows 2000, some features may not be available	Windows XP, XP x64, Vista, Windows 2000 5.00.2195 or later, Vista x64
Mac OSX v10.4.8 or later	Mac OSX 10.3.9, 10.4, 10.5	Mac OSX (10.4.4-10.5.x Intel, Power PC) 10.3.9 Power PC
★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★
★★★★★	★★★★★	★★★★★

Running costs explained

Until recently, printer running costs have been quoted in terms of the cost of the ink or toner required to cover a fixed proportion of an A4 page – usually five per cent for monochrome or five per cent of each colour for full-colour pages.

While this has been a useful guide, the lack of a formalised testing procedure has left the details of how these costs are calculated in the hands of the manufacturer.

This time, we have a new method of quoting inkjet cartridge print yields. Known as ISO/IEC 24711 and 24712:2007, it's an attempt to standardise the way ink yields are quoted in order to ensure fairer comparison between manufacturers.

ISO/IEC 24712:2007 sets out a standard set of test documents to be printed. It contains four customer-type documents and one diagnostic page that is used to determine when the ink has been exhausted. The testing methodology is set out in ISO/IEC 24711.

Using this method we know that each manufacturer is printing the same test pages under the same conditions, thereby giving us a fairer test and one that is more representative of how printers are actually



used. Although we're looking primarily at photo printing, these test documents are based on typical office and home printing tasks and not photo printing. A future ISO specification will deal with photo printing yields using 10x15cm prints.

However, using these results we can get a good comparison of the running costs of one printer when compared with another. This means that, as in real life, different ink colours will run out at different times due to the unequal way we use colour in our documents.

Printers with individual colour ink tanks will therefore have different yields for each colour. It also means that printers with more than four inks, such as HP's Photosmart C8180 which has six, will use their additional inks as necessary – usually in much smaller amounts than the five per cent coverage previously quoted.

For full details of the specifications, visit www.iso.org. A charge is made for downloading these documents.

For each printer we have calculated a cost per A4 page based on published ISO/IEC yields (see graphs on page 116).

Editor's Choice

Editor's Choice Canon Pixma MP610

Recommended HP Photosmart C8180 • **Great Value** Kodak ESP 5



Canon Pixma MP610

In our search for a high-quality inkjet MFD, we've discovered a wide range of functionality, huge differences in quality and varying levels of performance in prices, ranging from £119.99 to £298.45.

Although it's in the nature of an MFD to try to do absolutely everything, no single product is a clear winner across the board. However, three stand out as being excellent purchases for their own reasons.

First of all, our Great Value award goes to the Kodak ESP 5. It costs around £10 more than Epson's Stylus Photo SX40, but thanks to Kodak's ultra-aggressive ink pricing, running costs are kept almost unbelievably low. You'll pay considerably less per print and still get excellent-quality results from an



HP Photosmart C8180

MFD that's extremely easy to use – if a little light on features.

At the other end of the scale, HP's Photosmart C8180 is utterly feature-packed. Some are obviously useful, such as a built-in Lightscribe DVD burner, dual paper trays and an 8.9cm touchscreen interface. Other features include functions you may not have realised you need, such as the ability to scan film and the sheer usability of the supporting software.

It's at least twice as expensive as the other MFDs in this group test, but you most definitely get what you pay for – Recommended.

Our Editor's Choice is the rather less extravagant, yet still hugely capable Canon Pixma MP610. Top-notch print quality (it's a



Kodak ESP 5

close fight with the Photosmart C8180), blistering performance and low running costs make this an obvious winner at this price. In use, it feels and operates like a professional piece of equipment that won't look like a joke next to your expensive SLR. It does cost considerably more per print than Kodak's ESP 5, but still undercuts the rest of the competition by a large margin.

It's a little less friendly than HP's product, yet still easy to use – especially if you're more familiar with printing and scanning than the average amateur. It doesn't come with wireless networking as standard, but an optional Bluetooth module is available.

If you're serious about your photos, then this is most definitely the one to go for. **PCW**

akasa

infiniti **zor**

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will transform into an ace rig,
11 front bays and watercooling setup

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DEFENCE AGAINST DARK ARTS

No matter which spam filter you use, the odd rogue email will inevitably get through. And that can wreak havoc on a computer, especially when spammers use social-engineering techniques to entice users into opening doors in the defences. In this month's feature, we look at how best to protect against such threats.

In the reviews section we put Microsoft's SQL Server 2008 through its paces, then tell you what we think of Draytek's Vigorpro Unified Security Firewall. We also look at a virtualisation product from technology leader VMWare as it attempts to break into the virtual application market, and a somewhat alternative solution from Parallels. Finally, we have the latest in high-volume scanners from Fujitsu – an ideal companion for serious document management.

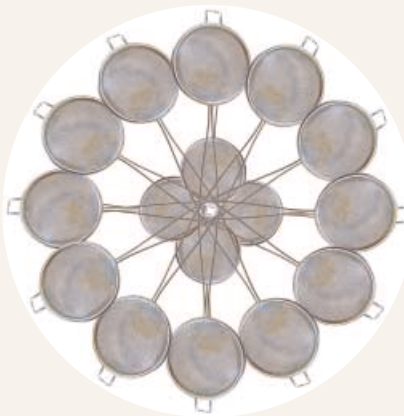
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The Vigorpro 5510 is an affordable all-in-one network device that will protect you from all forms of internet nasties

OUR SCORING

Excellent ★★★★★ Very good ★★★★☆ Good ★★★☆☆ Below average ★★☆☆☆ Poor ★☆☆☆☆

OUR AWARDS

Editor's Choice: The best product in a comparative group test. Anything that wins this award is of better quality than its competitors.

Recommended: A product that combines great features, usability and value for money.

Great Value: Not the best in class, but a product that has superior features and performance for the price.



Editor's Choice
Business



Recommended
Business



Great Value
Business

The business awards are used for products that are more suited to home offices or small businesses.

BUSINESS



'The Fujitsu fi-6230 is a compact and affordable scanner, and a good choice for the small business looking to capture large amounts of printed information'

Read the review on page 130

A holistic approach to spam



No one anti-spam technique can ever be completely effective. Stephen Copestake explains why a joined-up approach that adopts a variety of techniques often works best

In April this year, in a variety of spamming known as 'whaling', an email scam targeted a number (estimated at around 20,000) of senior corporate managers in San Francisco. The emails were delivered to CEOs and other high-ranking executives, and carried their full name, phone number and company name. The messages purported to be an 'official' subpoena requiring them to appear before a Federal grand jury. Around 2,000 of the recipients opted to view a more detailed copy of the subpoena and were taken to a website that urged them to install a browser add-on in order to read the document. Doing this installed a backdoor and key-logging application capable of stealing login credentials on banking and related websites. The scam was repeated several days later and some 70 additional executives were taken in.

Two points should be made here. First, it was reported that, of the top 35 anti-virus products, only eight detected the malware in the initial, larger surge. In the second attack, the total increased to 11 but remained woefully inadequate. Second, the fact that, on a personal level, many of the executives were taken in implies a hopelessly inadequate familiarity with the way spam operates (it also presupposes extreme gullibility, but that's another issue). Additionally, it reveals that, on the corporate level, whatever preventative measures were in force were ineffective. Moreover, these large organisations (with no shortage of disposable funds) undoubtedly believed the anti-spam methodologies they had implemented were satisfactory.

So, if large companies are incapable of protecting themselves from spam, what can small businesses do to achieve this? Fortunately, it is possible to acquire effective protection. The answer is to use a joined-up approach that uses a variety of methods.

People-based methodologies

The first step any business should take is to allocate specific responsibility for spam protection. In large organisations, this would involve creating and maintaining an IT security department, but the equivalent for small businesses entails nominating an employee whose job it is to keep abreast of spam developments. The appointed individual should ensure that the company takes whatever measures are required to maintain and protect data (we'll look at some of the available methodologies later) and must stay informed about real-time developments in spam and malware distribution. This can be done easily by

making a point of regularly viewing websites that provide breaking news on spam or malware generally.

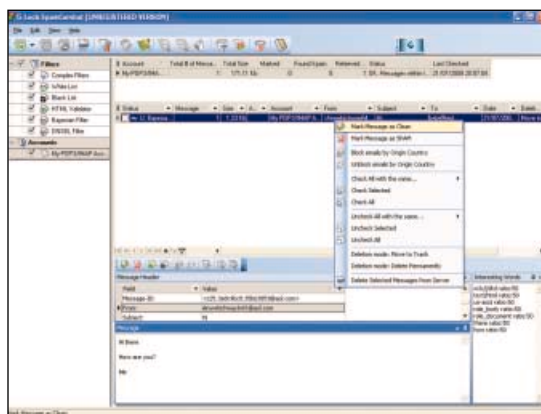
A quick Google search reveals relevant sites. For example, several well-known news-related sites target spam-based topics – see the comprehensive Topix on www.topix.com/news/spam, for example. Other sites – such as Spamfo on www.spamfo.co.uk – are exclusively dedicated to providing up-to-date information on spam.

Part of the nominated individual's job should also involve formally training the workforce in how to recognise, and deal with, any spam that penetrates the organisation's defences. Naturally, this training needs to be refreshed at frequent intervals. This step is arguably the most important but it's one that, in small businesses, is often overlooked. When the focus on spam protection is diffuse, little if anything is accomplished.

Process-based approaches

The ideal is to eliminate spam, while at the same time avoiding sidelining genuine messages as junk. However, in the real world there is no magic solution that will achieve this fully. Additionally, no single anti-spam solution, however clever or well conceived, can even come close to this goal. The answer is to adopt a multipronged approach. There are three broad aspects to this. First, ISPs and email hosting companies aim to filter out spam before it reaches the consumer. This so-called 'in-the-cloud' filtering is effective up to a point but beyond the control of the business.

G-Lock Spam Combat is a highly effective base against spam – its Bayesian filter is easy to train



Second, incoming and outgoing mail can be verified at the network edge. This applies mostly to large organisations, where mail or network administrators co-ordinate the task of detecting spam via perimeter security devices (allied to software).

Third, desktop anti-spam techniques have the greatest application for small businesses. To pick up and deal with as much spam as possible, try using a variety of desktop technologies.

Important aspects here include the use of blacklists of known spammers – perhaps the most obvious way to avoid spam. Many anti-spam technologies update blacklists regularly (because spammers frequently create new email addresses), so they remain a potent way to avoid spam.

Blacklists are highly useful but need to be modified by the use of what are called 'whitelists'. These are lists of contacts that the organisation or its members can define as valid, which means that all mail from them is acceptable. Whitelists override blacklists and many anti-spam technologies make use of both in order to maximise efficiency.

Mail that has penetrated through to the email client can be checked by anti-spam software, which searches for messages that contain techniques used by spammers. These include embedded images, hidden text and deliberate HTML formatting errors.



Spamihilator functions such as plug-ins are accessible from the system tray

Useful tools

The individual charged with implementing and managing spam prevention needs to put into service a number of desktop solutions using a variety of techniques. We'll look at a useful selection here. These are merely suggestions from a wide pool of possibilities.

G-Lock Spam Combat (www.glocksoft.com)

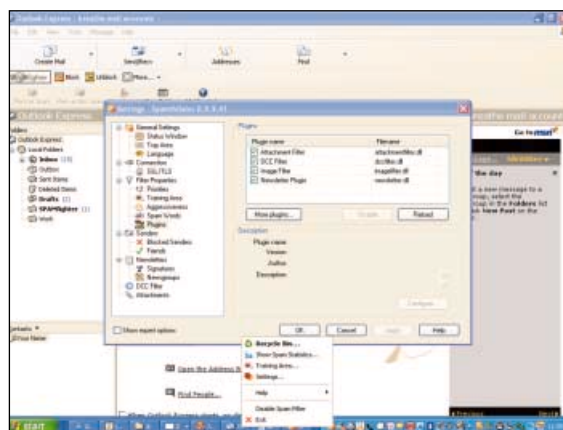
As part of your armoury of anti-spam techniques, it's a good idea to use one solution offering a multiplicity of approaches. In essence, G-Lock Spam Combat uses a combination of specialised anti-spam filters that block spam at the server level to prevent junk reaching the email client. These include standard whitelist and blacklist filters (as criteria, you can use any words or even IP addresses). Specialised filters include HTML Validator, which checks tags for validity. The Bayesian filter uses a probability theorem to predict whether email is spam (more on how this works at <http://tinyurl.com/6p79md>).

G-Lock Spam Combat is free for personal use but even the commercial version is reasonably priced at \$35 (around £18) per licence.

Spamfighter (www.spamfighter.com)

Spamfighter is a plug-in for Outlook Express, Outlook and Windows Mail and works well as a supplementary anti-spam technique. Installing Spamfighter launches a dedicated toolbar in the

The functions on Spamfighter's dedicated toolbar are fully customisable



email client. When a new email arrives, Spamfighter tests it. If it's spam, it's moved to a spam folder. If junk makes it through, you click a toolbar button and the spam is removed (more or less simultaneously) from the other members of the Spamfighter community (at the time of writing, these number 5,153,314). This community approach, and the immediacy it provides, adds a new dimension and makes Spamfighter a very welcome addition to your anti-spam armoury. Spamfighter installs as the Pro version and, after a trial period, reverts to the free (and slightly limited) personal-use incarnation. The Pro version for commercial use costs £17 per PC per year.

Spamihilator (www.spamihilator.com)

Spamihilator stops spam from reaching your email client, and works with just about all of them. It uses fewer filters than most other anti-spam solutions. In addition to Bayesian filtering, however, a standard Word filter searches messages for known keywords (user-defined words can be added).

Although the Bayesian filter only promises to stop 98 per cent of spam, what makes Spamihilator so useful is the fact that around 40 plug-ins can be added to it (some of these even allow you to customise Spamihilator in accordance with the spam you receive). For example, the DCC-Filter plug-in sends a checksum of all incoming mail to the DCC Network (<http://tinyurl.com/5lt5yl>). If other users have sent the same checksum, then the mail is recognised as spam.

The Misspelled Filter plug-in finds deliberate misspellings of words you've specified as bad (for example, 'paaaradiiiiise' and 'p@radise' for 'paradise'). The Alphabet Soup filter weeds out chains of miscellaneous characters, and the Empty Mail Filter blocks messages that are empty or contain few words. You can specify the number threshold. Best of all, Spamihilator and its plug-ins are completely free. **PCW**

The rise of spam and scams

The first instance of spam may well have occurred in 1978 (<http://tinyurl.com/4xbr8u>) when a now defunct PC manufacturer sent junk mail to 400 individuals over the Arpanet.

However, the first true internet spam was probably on the morning of 13 April 1994, when Ray Everett came into his office at the Washington-based American Immigration Lawyers Association to a stack of complaints about a Green Card Lottery scam (where immigrants seeking

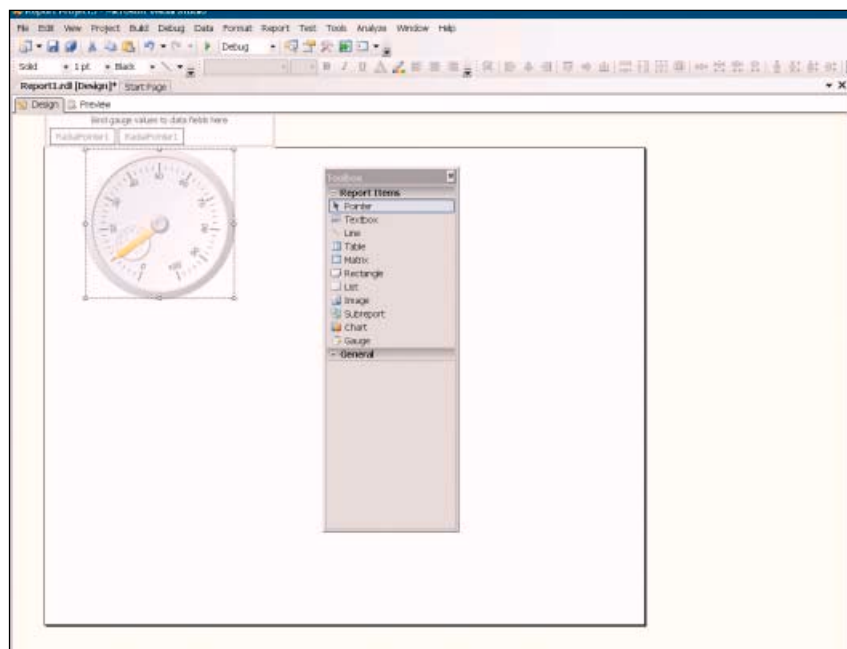
permanent resident status in the United States were duped into paying exorbitant fees to fast-forward their applications).

This scam (<http://tinyurl.com/5gywk8>) was the first to be perpetrated via Usenet newsgroups. Since then, in contrast to the demise of direct mail through our real letterboxes, electronic junk mail has proliferated to the point where, according to some estimates, only two out of every 10 emails contain genuine correspondence between real people.

DATABASE SOFTWARE

SQL Server 2008

At last, Microsoft's new version of the industrial-strength RDBMS



One of the new Gauge controls under construction

By the time you read this, SQL Server 2008 will have been released. It has been three years in gestation, but the wait has been worthwhile.

Most Microsoft products follow a cycle – major release followed by minor. SQL Server 2000 to 2005 was a huge change. The Business Intelligence (BI) tools changed extensively, the engine altered significantly, and even the user interface (UI) was completely different. So 2005 to 2008 ought to be a minor change, but in many ways it isn't. True the UI is, in effect, the same but there have been significant changes in the BI tools and in the database engine itself.

There is now a data compression feature, which is great if you have increasing data volumes. Microsoft has implemented both row and column compression. Clearly there is a performance overhead in compressing the data during writes and decompressing it during reads; however, Microsoft reckons that query performance is enhanced because the reduction in disk I/O outweighs the decompression hit.

Then there's transparent data encryption, which can be implemented at the engine level, so you can encrypt the data without making changes to the applications.

For the very trendy area of business continuity, the database mirroring has been enhanced, which translates as faster in operation and easier to set up and drive. Of course, mirroring requires that the log files are streamed between the two servers so the new log stream compression is a very useful addition because it too helps to speed up the mirroring.

One of the biggest changes is the addition of the spatial data types. These allow you to plot data on the Earth's surface and do clever calculations; for example, how many customers live within 10 miles of a depot.

The process of backing up is all-important, and the backup system has also been rewritten to produce impressive performance improvements. Possibly the most important improvement to the BI stack are the changes to Reporting Services, which has been seriously overhauled and has several enticing additions. Not only do you get upgraded versions of Report Builder and Report Designer, but there is also a standalone report builder tool with an Office-style ribbon interface that's offered as a web download.

There are new controls for displaying data: one is the Tablix, which combines the features of Tables, Lists and Matrices, and can be used to produce a highly flexible customisable data display. Also new is the Gauge control to display a single value, and multiple gauges can be an effective way of comparing values. New chart types are also supported.

In the range of different versions, top of the heap is SQL Server Enterprise edition for major organisations, with a full range of features and all the BI tools. The Standard version is aimed at departmental and small- to medium-size OLTP systems. It has a reduced feature set and a subset of the BI capabilities (Microsoft's website has full feature comparisons between all editions).

There are also Workgroup, Web, Compact and Express editions, with the latter being of interest to small businesses thinking of moving to a client-server database engine. It's a good learning ground and ideal for organisations with Access experience. What's more, it's free to download. Not only can you upsize existing Access applications, but Access is also a great choice as the client end of the client-server relationship. The Express edition is more than capable of producing desktop and small server applications. *Mark Whitehorn*

Verdict

Pros A full-featured client-server RDBMS, with versions for everyone, including beginners

Cons The free Express edition lacks some useful features

Overall A world-class RDBMS with great BI capabilities

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price Varies according to version.

Free 180-day trials are available from Microsoft's website

Contact Microsoft 0870 608 0800
www.microsoft.co.uk (for reseller list see <http://tinyurl.com/2xb6pq>)

System requirements For 32-bit SQL Server 2008 Standard: 1GHz processor (2GHz recommended) • 512MB Ram (2GB or more recommended) • Windows XP, Windows Server, Vista • .Net Framework 3.51 • SQL Server Native Client • SQL Server Setup support files • Windows Installer 4.5 or later and Data Access Components (MDAC) 2.8 SP1 or later • Minimum 1,024x768 resolution • NTFS file format recommended

NETWORK SECURITY

Draytek Vigorpro 5510

Affordable network protection in one device



The Vigorpro 5510 is equipped to protect your network against all kinds of internet nasties

All-in-one security appliances such as Draytek's Vigorpro 5510 are designed to be both cheaper and easier to manage than separate firewall, anti-virus, anti-spam and other tools, and it certainly scores well as far as cost is concerned. However, we didn't find the Draytek appliance anywhere near as simple to set up and use as we would have liked.

You get a small rack-mountable box with a clutch of connectors and LEDs at the front. Five of these are Gigabit Ethernet ports for Lan attachment, with two 10/100Mbps/sec Ethernet ports alongside for internet connectivity. That's typically done via Ethernet ADSL or cable modems, with policy-based load balancing of the Wan connections as standard. There's also a USB port, which can be used either to share a printer or provide an alternative second Wan interface via a 3G mobile phone or modem.

The software is Draytek's own Dray OS, featuring a stateful inspection firewall able to examine packets in more detail than the firewalls in most ordinary routers. It also supports VPN (virtual private networks) remote access using both conventional tunnelling protocols/clients and SSL (Secure Socket Layer) encryption, where remote users connect using a browser. Site-to-site VPN connections can also be configured, and up to 200 conventional tunnels and 50 SSL users supported.

A fairly basic web interface is used to manage the Vigorpro with a wizard to help you get started. You also need to decide which anti-virus software to use with two scanners available – one from Draytek and the other Kaspersky. Only one can be activated – the Draytek licence supplied lasting for three years and the Kaspersky just one.

Running costs are very reasonable. Expect to pay about £100 ex Vat per year when either of the anti-virus licences run out. You'll also need to budget £90 ex Vat per year to add anti-spam protection, courtesy of Commtouch technology, plus £30 or more (depending on number of users) to extend the 30-day trial of the Surfcontrol content-filtering tool supplied.

Separate profiles are used to configure each of these options, making it possible to customise the setup to suit a variety of organisations, but it's important to remember that inspection and filtering is all done at the internet gateway. So, for example, mobile users still need local firewall and anti-virus protection when they connect to other networks. And there are no quarantine facilities on the Vigorpro. Suspected spam messages are simply flagged in the subject line, calling for extra setup work to trap flagged messages, either at the mail server or on client systems.

We didn't find the Vigorpro 5510 particularly difficult to configure, and were impressed by the ability to block access to categorised websites and prevent use of instant messaging applications. However, a high level of technical expertise is required to get the best out of this product and the accompanying manuals are poorly translated, making them difficult to follow.

Some of the options, such as using a 3G modem, are barely documented or explained at all, and the management interface could be easier too.

It's far from a plug-and-play solution and most small businesses will need expert help putting it to work. That said, the Vigorpro 5510 can deliver what's claimed and, once configured, provide small businesses with a good level of protection against common network threats.

Alan Stevens

Verdict

Pros Stateful inspection firewall, plus anti-virus, anti-spam and content-filtering tools; conventional and SSL-based VPN

Cons High level of technical expertise required to deploy; poorly translated documentation; no quarantine facilities

Overall A reasonable, well-specified small, business security appliance, but tricky to set up and manage

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £821.33 (£699 ex Vat)

Contact SEG Communications
020 8381 5500
www.draytek.co.uk

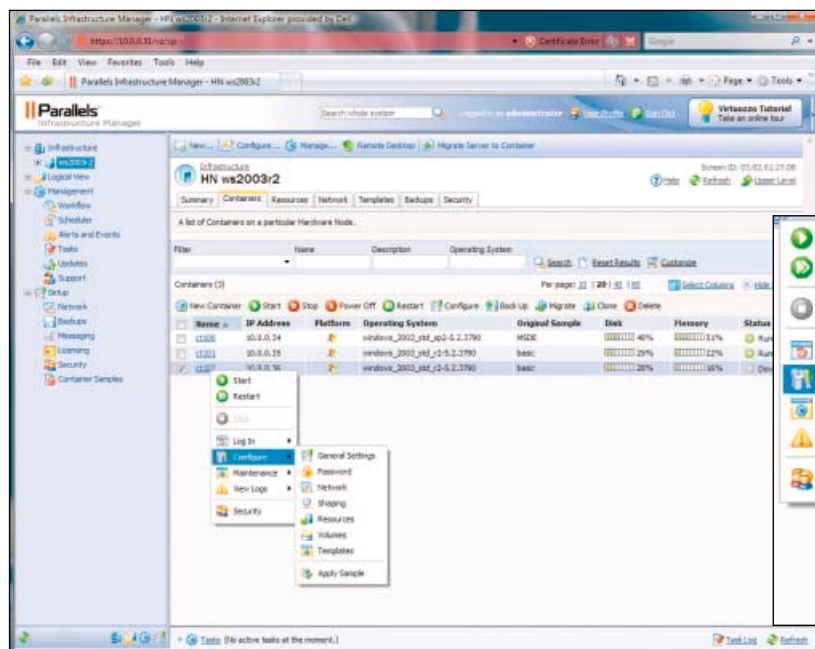
Specifications 5 Gigabit Ethernet

Lan ports • 2 10/100Mbps/sec Ethernet Wan ports • USB port (shared printer or 3G modem) • Stateful inspection firewall • 200 VPN tunnels; 50 SSL VPN users • Draytek/Kaspersky anti-virus • Commtouch anti-spam • Surfcontrol content filtering

SERVER VIRTUALISATION

Parallels Virtuozzo Containers 4.0

Take a different approach to server virtualisation with this easy-to-use application



The web-based Parallels Infrastructure Manager console can be used to manage Virtuozzo Containers running on multiple servers

Most virtualisation products work by emulating hardware that enables a single physical server to host multiple virtual machines, each running its own operating system. With Virtuozzo Containers, however, the operating system gets virtualised rather than the hardware. So you only install the one OS; the Virtuozzo software adds the ability to create a layer of multiple 'containers' where applications run in their own protected environments.

Virtuozzo Containers can be installed on any 32-bit or 64-bit industry-standard server able to run Windows Server 2003 (with or without the R2 update) or one of a list of supported Linux distros. It needs to be installed first; Parallels recommends a fresh install with no patches applied, followed by the Virtuozzo software. On our test server, this took just over an hour, but the process is automated with very few decisions to make, and we had no problems getting it up and running.

Once installed, the software is very easy to use and works like a more conventional virtual machine product. Two management tools are available – the Parallels Management Console, which is configured and runs on the local server itself and, for an extra £250 ex Vat, a web-based tool, Parallels Infrastructure Manager. This can be run remotely and used to manage multiple Containers servers, as well as other Parallels products.

The same host operating system is used to support processing within containers, but each has its own Registry, user and other settings and, from the application and user point of view, appears to be a self-contained and separate instance of Windows or Linux.

Templates make containers quick and easy to create, applying default settings suitable for particular applications. A set of standard templates is included

and you can create others of your own. Containers can then be started automatically when the server boots or manually from the management console, which also provides tools to load-balance the processor and disk resources available to each container and schedule container backups.

Built-in monitoring tools make it easy to see what's going on; how resources are being consumed and so on. You can also connect to a container directly using Windows Remote Desktop and run processes and applications using shared or independent files. You could, if you wanted, use the Parallels software to implement a sophisticated terminal/application server.

We were very impressed by what Virtuozzo Containers has to offer. With no extra operating system layer to get in the way, performance is on a par or better than alternative hypervisor products and, because there's only one set of operating system files, disk utilisation is a lot better too. It's also very easy to manage and, because you don't need to install a new OS every time, containers take just a few minutes to create. As a result, end users can be given rights to create and manage containers themselves via a web-based tool called the Parallels Power Panel.

On the downside, you can't host Windows and Linux containers on the same server, and you still need to take care when it comes to application licensing. Added to which, the Parallels software is far from cheap, which may not deter larger companies. But smaller businesses with limited budgets are likely to prefer more conventional virtualisation products, such as VMWare Server and Microsoft's Virtual Server 2005 R2, as these offer usable virtualisation facilities for free.

Alan Stevens

Verdict

Pros Only one operating system required; easy to manage; fast container deployment; delegated end-user management; Windows and Linux support

Cons Can't mix guest operating systems; expensive for smaller businesses

Overall An impressive server virtualisation product, but more likely to appeal to larger companies

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £1,468.75 (£1,250 ex Vat) for dual-processor server licence

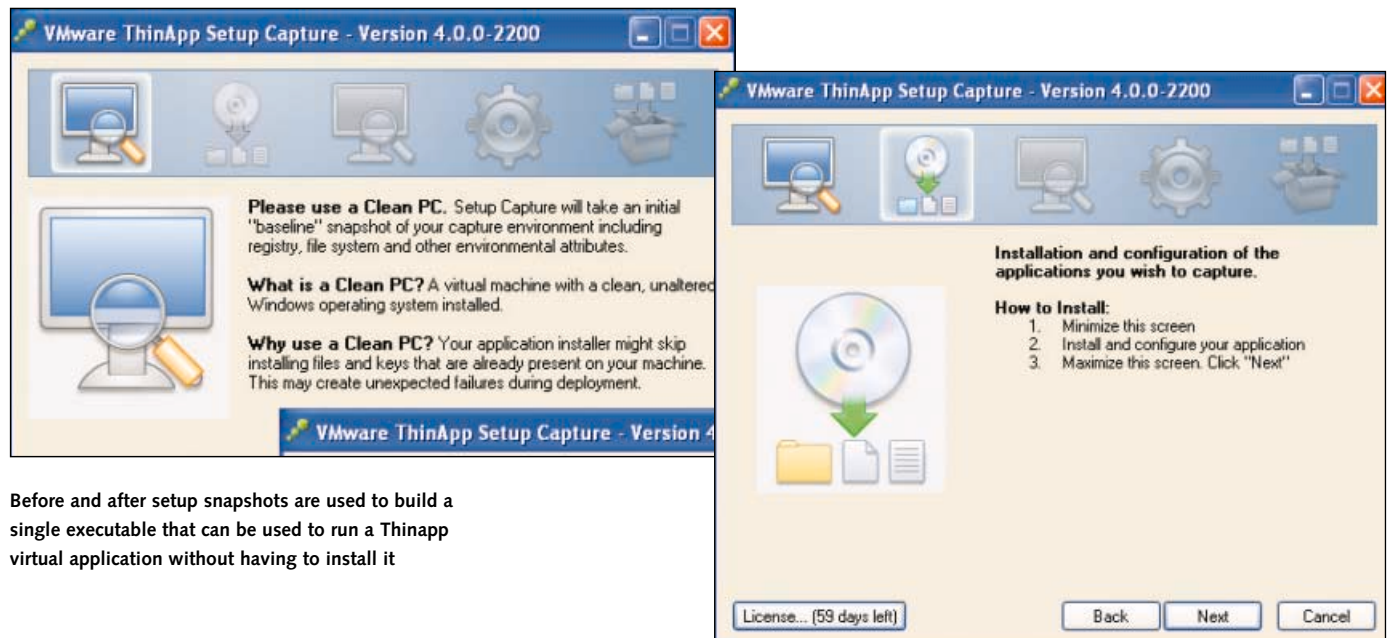
Contact Parallels 020 7060 0880
www.parallels.com

System requirements Server with Intel/AMD processor (32-bit or 64-bit) • Windows Server 2003 or a supported Linux distro (CentOS, Fedora Core, Red Hat Enterprise or Suse Linux Enterprise)

APPLICATION VIRTUALISATION

VMWare Thinapp 4.0

Manage applications easily across your business



Before and after setup snapshots are used to build a single executable that can be used to run a Thinapp virtual application without having to install it

Thinapp is VMWare's first stab at application virtualisation, following its acquisition of specialist developer Thinstall. Like similar tools, it allows you to package files and settings needed to run an application into one executable, which in turn runs in its own, self-contained environment. Nothing needs to be installed and there's no impact on other software. Nor is there any need for an agent to be installed first. VMWare has also added unique new application linking and update facilities.

Thinapp 4.0 is part of a suite of tools that includes a copy of VMWare Workstation. This isn't essential, but allows you to build a virtual machine running a 'clean' install of Windows to avoid compatibility issues when creating applications. Any version of Windows – from NT onwards – can be used here, and the finished Thinapp application runs on almost any other, although we got the best results if the two were the same.

The procedure itself is pretty straightforward. To start, simply run the Thinapp Setup Capture tool on the clean VM to take a snapshot of the base system, then after you've installed and configured the application you want to run, take another of the modified environment. By analysing the differences between the two, the Thinapp program then builds the packaged executable and an MSI file. Either can be used to distribute and run the application with runtime settings stored in a sandbox, held either locally or on a server or network share.

No changes are made to the host PC when the application runs, with the Thinapp software emulating the required Registry entries, DLL dependencies and so on to fool the application into 'thinking' it's fully installed. Applications start working as soon as enough

code has been loaded, rather than waiting for the entire package to be downloaded, with no need for a server to manage the streaming process.

Another advantage is the ability to run applications in user mode even where administrator rights would normally be required for installation. Add the ability to work on a wide range of platforms, and users can be left to install applications themselves and even download and run them on demand, if required.

Among other features added by VMWare in this release is the ability to update already distributed applications via an HTTP/S server (Application Sync), the applications pulling down and applying updates themselves. Another, Application Link, gives the ability to link the virtual environments in which applications run to – for example, to allow programs dependent on the .Net framework or Java to make use of a virtual deployment of that code.

We used Thinapp to package a number of applications, including Mozilla Firefox and Microsoft Office, and found the process both quick and simple. However, you still have to conform to licensing requirements and shouldn't use Thinapp to circumvent them. Some applications can't be handled, such as those requiring special device drivers, and others such as virus scanners, which work at a low level. There's no support for 64-bit applications either, and the more advanced options require manual configuration, which can be quite complex.

Lastly, although user licences start at £17.50 ex Vat, the full suite needed to capture applications is a little pricey for the smaller business. Still, by taking a lot of the hassle out of deploying and managing applications, it might just be worth it.

Alan Stevens

Verdict

Pros Simple capture of application setup; agent-free deployment; USB key deployment; applications can be run on a wide range of Windows hosts; on-demand streaming

Cons Expensive for smaller businesses; advanced options complex to configure; some applications can't be handled

Overall Although not cheap, Thinapp neatly overcomes many of the issues associated with deploying and managing applications within a small business

Features ★★★★★
Ease of use ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price £2,937.50 (£2,500 ex Vat) **Thinapp Suite with 50 client licences**

Contact VMWare 01276 414 300
www.vmware.com

System requirements PC running a clean install of Windows NT, 2000, XP, 2003 Server or Vista • 32-bit and 64-bit platforms can both be employed, but 64-bit applications are not supported

DOCUMENT SCANNER

Fujitsu fi-6230

This scanner can handle almost anything



If the sheet feeder can't take it, the fi-6230 scanner from Fujitsu has a flatbed scanner built in

Professional, high-volume, document scanners can be both expensive and bulky. The fi-6230 from Fujitsu, however, is affordable and compact, making it a good choice for the small business looking to capture large amounts of printed information.

For those looking for a really compact unit the almost identical fi-6130 comes in at just £589 ex Vat and takes up about a third of the space. That's because the fi-6230 has an additional flatbed scanner bolted onto the front to handle books and other documents that the basic sheet-fed scanner, built into both models, can't accommodate. That said, the Fujitsu automatic document feeder (ADF) is very flexible, employing what the company calls 'reversing rolling' technology to enable it to cope with everything from very thin and fragile materials to thicker card. It even takes plastic, up to 1.4mm thick.

The ADF has a capacity of 50 pages and includes an ultrasonic sensor to detect misfeeds. Duplex (double-sided) scanning comes as standard and maximum throughput is said to be 80 images per minute at 200dpi. Actual results will, of course, vary depending on the type of document involved and the resolution selected, the maximum being 600dpi.

Colour documents are detected automatically with auto-resizing (A8 – A4) and de-skew capabilities built in to make it easier to handle mixed document batches. We found it to be quick and capable, no matter what we threw at it – from tissue-thin faxes through to plastic credit cards.

With its robust construction the fi-6230 should be more than capable of handling the scanning requirements of a small business or workgroup. It can even scan very long documents – up to 3,048mm

(about 10 feet) in length, should the need arise.

Power comes via an external AC adapter and the only interface is a single USB2 port for direct attachment to a PC (cable included). Controls too are minimal, with just an off switch plus an error indicator and buttons to start/stop a scan and open a host application.

Buyers of this type of scanner will, typically, want to use it with a document management system of some kind, for which Windows Twain and Isis drivers are both supplied. Otherwise you get a fairly basic Windows-based program called Scandall Pro, which can be used with either of these. The bundled software does take a while to get to grips with, but will do what most small businesses want, especially when you install the Kofax VRS Professional software supplied with it, which adds extra image-enhancement facilities.

Scandall Pro also offers PDF-creation tools, but a full copy of Adobe Acrobat 8 (Standard Edition) is included, along with a trial copy of Quickscan Pro from EMC. A much more professional scanning application, Quickscan Pro offers built-in optical character recognition (OCR) to generate editable text from scanned documents, plus custom despeckling, deskewing and other enhancement tools. We preferred the EMC software to the free Scandall utility; however, you do only get a trial version and a full licence will cost £300 ex Vat or more when the trial expires.

A very smart-looking device, the Fujitsu fi-6230 is well constructed, lives up to the claims made for its performance and compares well on price against the competition. The bundled scanning software could be better, but that's unlikely to be an issue for most buyers and is easily remedied if it is. *Alan Stevens*

Verdict

Pros Fast duplex scanning; compact size; flexible document feeder can handle a variety of documents; flatbed for awkward materials; Twain and Isis drivers

Cons Bundled scanning software fairly basic

Overall A compact, fast, affordable high-volume scanner. Well equipped to handle the needs of small businesses

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

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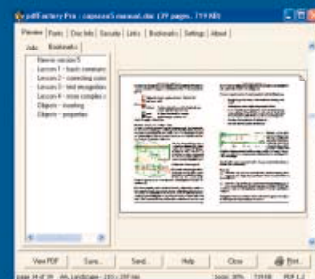
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GET IT COVERED

Hands On is the section of the magazine where our experts provide solutions to your computing problems, starting with Question Time. Contributors' contact details are on page 139, and we'd like to hear from you with suggestions on what you'd like to see covered.

This month we have a look at upgrading in Hardware, and if you can't upgrade, why not run Linux on a low-spec machine? There's a look at how Apple's Aperture stacks up against Adobe Lightroom, and in Word processing we study long documents.

In Performance there's a look at setting up an FTP server to transfer files, and Networks continues its look at Windows Home Server. In Spreadsheets you can learn how to plan projects, or brush up on date handling in Databases. We've also found time to look at security in Web Development, and how to debug PHP on Windows in Visual Programming, finishing with a selection of Windows hint and tips.

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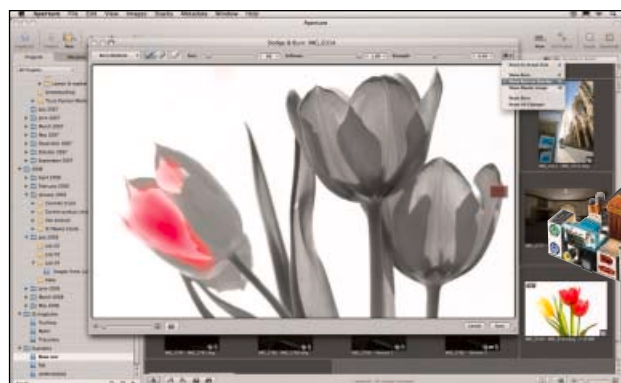
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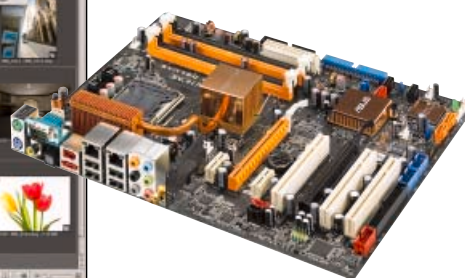
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Left: Manage image libraries (see page 148)

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Advice from our experts

PCW's experts solve your problems

DIGITAL IMAGING

Q If you look at screen 1, both pictures are identical; one is just a file copy of the other. But when I right-click the photo and select Refresh Thumbnail, the date then shows. How is it possible that the date isn't in the thumbnail if it is part of the image?

I want to remove the date completely so it doesn't show – I'm convinced you don't need to crop the photo or edit it with Photoshop to do this.

I've asked Kodak about this problem and it said to remove the date stamp, you need to crop the photo. I'm sure there's another way.
James

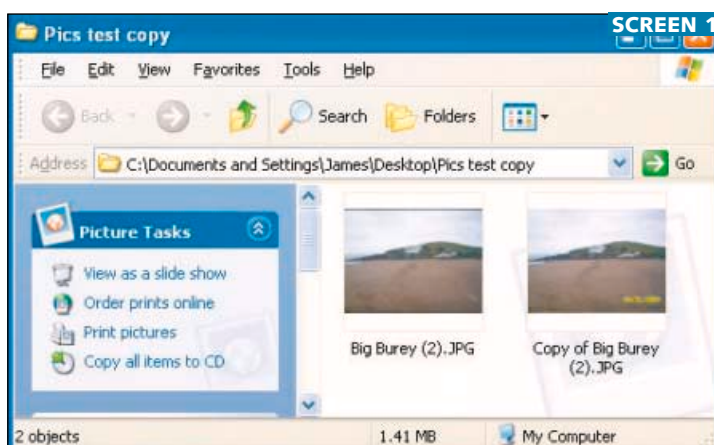
A First, the bad news. Kodak is right and the date stamp is permanently recorded over the original image data. The reason it doesn't appear on the original thumbnail might be that the thumbnail was produced in-camera prior to the date stamp being applied. When you refresh the thumbnail, a new one is created from the image data, which includes the date stamp.

The good news? You can clone in that foreground detail in a few seconds and you'd never know the difference.

Q How can I open .eml files that are sent to me by email? They are usually photographs and I have resisted all efforts to open them.

Tony Fowler

A EML is a file extension used by Microsoft Outlook. The solution to this problem is provided by a Microsoft Knowledgebase article, which you can find at <http://support.microsoft.com/kb/312355>.



HARDWARE

Q I have a Toshiba laptop with 2GB of Ram, an Intel Dual Core Processor and an 80GB hard disk running Windows Vista, which I upgraded to Ultimate with a retail disc. I initially toyed with the idea of downgrading to Windows XP Pro and bought an identical hard disk for the laptop with the intention of installing it on that and keeping the original hard disk with Vista untouched. Would you agree this is a feasible solution for anyone who wants to preserve their original Vista installation for future use and convert the laptop to XP?

Richard

A If you're talking about physically swapping the hard disk with Vista on it for a blank one to install XP, then yes, this should work fine. Once XP is successfully installed, you could then physically

A thumbnail made by the camera may not show a date that is burned into the image

With the VLC Media Player, you can view recordings from your PVR on the PC

swap the hard disks around when using the other operating system.

Obviously this isn't particularly convenient, though, and the connectors, not to mention the screws for the disk bay, aren't designed for regular changes. If you intend to regularly swap operating systems, we'd suggest configuring a dual-boot system instead.

This is quite easy, especially if you configure your hard disk with two separate partitions and install XP on one of them first. Once XP is installed, restart your PC, boot from the Vista disc, then choose the Custom option to install it on the second partition.

After Vista's installation is complete, you'll find a new boot menu is displayed when you restart your PC. There'll be two options labelled 'Earlier Version of Windows' and 'Microsoft Windows Vista'. Choosing the first will boot into Windows XP; choosing the second will boot into Vista. If you'd like the first option to read Windows XP or something different, download the handy EasyBCD utility from <http://neosmart.net>.

For a full guide to setting up a dual-boot XP/Vista system, see our October 2007 Hardware column (see www.pcw.co.uk/2195369).

Q I have the excellent updated Humax 9200T PVR (personal video recorder) and am interested in the possibility of transferring recordings to my PC, which is running Windows XP



Professional. Your helpful article in September's issue indicated that the procedure is straightforward, but what is the VLC Media Player you talked about?

Michael Bickley

A VLC Media Player is simply an alternative to Microsoft's Media Player, which is more suitable for playing recordings from the Humax PVR. You can download it from www.videolan.org/vlc.

Q I have a fairly standard Windows XP-based media centre that I built myself some time ago. The DVD drive is a standard NEC unit, the motherboard is an Asus A8N-VM CSM and I'm using the onboard Nvidia Geforce 6150 graphics chip. The DVD decoder and display software is Nvidia's Purevideo Gold.

As an experiment, I recently inserted an HD DVD to see what would happen. The short answer was nothing – the DVD spun a few times, but the PC didn't react in any way.

My question is why? Will a basic media centre handle high-definition DVDs? Is it the DVD player, the decoder software or possibly the display chip? What do I need to do in order to support HD DVDs and Blu-ray discs?

Vince Rutter

A HD DVD and Blu-ray discs may be the same size and shape as standard DVDs, but their data is packed in much more densely, so you'll need a new drive in order to read them. Both formats are also incompatible, so you won't be able to play HD DVD discs in a Blu-ray drive or vice versa. Luckily, though, there are now multiformat drives that can play both types, along with conventional DVDs and CDs.

Having the correct drive is only one part of the equation, though: you'll also need playback software that can understand the new formats, along with a sufficiently fast PC to decode their highly compressed data streams. We detailed this in previous editions, such as August 2007's Hardware and Performance columns, but you'll need a decent dual-core processor, a graphics card with hardware acceleration for HD formats and software such as Cyberlink's PowerDVD Ultra 7 and upwards.

So, sadly, little if any of your

current media PC configuration is up to the job. You'll need to upgrade pretty much all of it to support HD DVD and Blu-ray playback.

SPREADSHEETS

Q Can you tell me the difference between the Windows Clipboard and Office Clipboard? I'm using Excel 2007 with Windows XP.

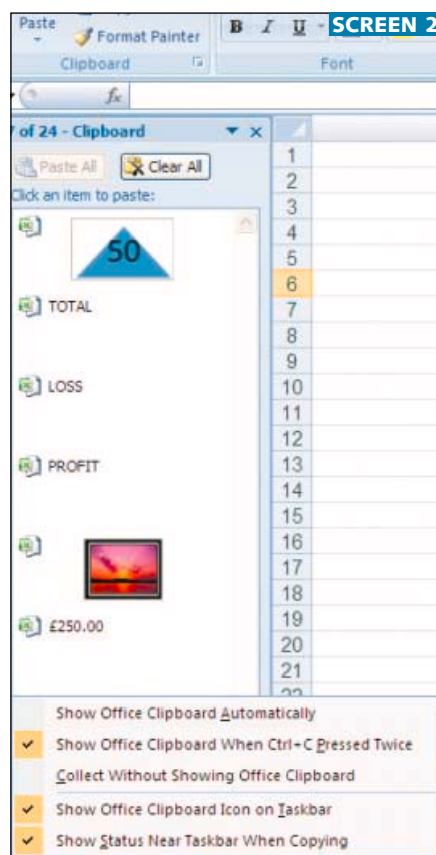
Kelly Martin

A The main difference is that the Windows Clipboard only holds one item at a time. When a new item is added, it replaces any existing one.

Although the Windows Clipboard works when you copy, cut or paste, the Windows Clipboard Viewer isn't readily accessible by default these days. However, if you open the clpbdr.exe file in the C:\WINDOWS\system32 folder, you can see anything that has been recently copied or cut.

The Office Clipboard can hold up to 24 items (see screen 2). The first item is only deleted when the 25th is

'Having the correct drive is only part of the equation'



Running Ubuntu

LINUX

Q I have an older laptop with 256MB of memory currently running Windows XP. I'd like to wipe the laptop clean and run Ubuntu. I downloaded the CD and tried to install it, but after the initial splash screen, the screen becomes corrupt and nothing else happens. I tried the CD in my main laptop and it worked. How can I fix this?

Mark Hendy

A There are a few possible reasons for the problem you have. First, the Live CD for version 8.04 officially requires 384MB or more of memory to install; however, I would at least expect you to be able to boot up in 256MB. It sounds like there may be a problem with the graphics.

On the first menu screen when the CD boots, press F4 and switch it to 'safe graphics' mode. If this doesn't help, press F6 instead and add the options 'noapic nolapic' (without the quotes) or 'noacpi'; these can sometimes resolve problems with older computers.

If you still have no luck, it may be worth trying an alternative distribution, such as Fedora.

added. The Office Clipboard allows you to choose whether items are collected or not when the Clipboard Task pane isn't displayed. (They're always collected when the pane is displayed.)

Under the Home tab, below Format Painter, click the arrow to the right of 'Clipboard'. At the bottom of the displayed Task pane is an Options button. Check or don't check 'Collect Without Showing Office Clipboard'.

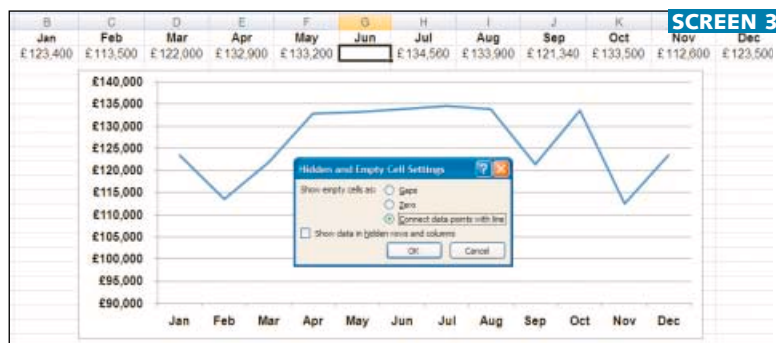
Q I used to be able to display more than one worksheet on screen by choosing New Window on the Window menu and then Arrange. How do I do this now that I've upgraded to Excel 2007?

Jack Barrett

A Click on the View tab on the Excel ribbon. In the Window group, click on New Window and then Arrange All. In the Arrange Windows dialogue box that's displayed, check 'Windows of active workbook' and then on whether you want the worksheets to be arranged horizontally, vertically, tiled or cascaded.

Q I'm charting data for all the months of the year, except there is no data for June. This means the line plunges to the bottom of the chart for this month.

Choices on the Office Clipboard



Controlling gaps
on an Excel 2007
line chart

I'm using Lotus 1-2-3. How can I make the line run continuously from May to July?

Coleen Clark

AIn Lotus 1-2-3, as well as in Quattro Pro and Excel for that matter, you can enter `=NA()` in the table for June. Also in Excel, prior to Excel 2007, you can choose Chart on the Options menu and then select 'Interpolated'.

In Excel 2007, right-click on the chart and choose 'Select Data' (see screen 3). In the Select Data Source dialog box, click on the Hidden and Empty Cells button. In the Hidden and Empty Cells box, choose 'Connect data points with line'. OK out.

QExcel used to provide a template for an expense report. I've upgraded to Excel 2007 and can't find the templates. Do they all exist online these days?

Carla Allen

AClick on the Office button and then on New. It's true that there are a lot of templates listed as being available online, but among the seven listed as 'Installed Templates', you'll find one for an expense report.

QUsing Excel, I prepare a roster for a number of inspectors who work out of a number of warehouse locations. How can I count how many times each inspector has worked from each of these warehouses, and how many times a particular inspector has worked from a particular warehouse in the six months preceding the latest recorded date?

Sheba Irtizall

AHere is an example with four inspectors and three locations, which you can adapt. Highlight

the range of visiting dates and in the Name box, to the left of the Formula Bar, enter 'Dates'. Similarly, create Names for each warehouse. Enter the inspectors' names and when and where they visited. Repeat their names in column F as shown.

In cell G2, enter `=SUM(IF(North=$F2,1,0))`
As this is an array formula, use Ctrl & Shift & Enter instead of just Enter. Excel will add curly brackets. Drag this formula to G5. Enter `=SUM(IF(West=$F2,1,0))` in cell H2 and drag down to H5. Enter `=SUM(IF(East=$F2,1,0))` in cell I2 and drag down to I5.

For the number of visits in the six months since the last entered date, type the array formula `=SUM(IF(North=$F9,IF(Dates>= A13-182,1,0)))` (Key: ⌘ code string continues) in cell G9 and drag down to G12. Follow this design for the rest of the table (see screen 4).

WINDOWS

QI want to copy my Favorites folder from my desktop onto my laptop. I thought it would be easy, but I just can't see how to synchronise the folder.

I can find the folder easily enough on the desktop (running Windows XP), so tried a straightforward Ctrl & A, Ctrl & C onto my memory stick. The problem lies on the laptop running Windows Vista: I can see

Analysing a roster
with array formulas

SCREEN 4									
	A	B	C	D	E	F	G	H	I
1	Dates	North	West	East			North	West	East
2	1/6/2007	Art	West	Bob		Art	3	3	2
3	1/7/2007	Bob	Sam	Sam		Bob	3	3	3
4	1/8/2007	Sam	Sid	Sid		Sam	2	2	2
5	1/9/2007	Sid	Bob	Bob		Sid	4	3	5
6	1/10/2007	Bob	Art	Sid					
7	1/11/2007	Sid	Sid	Art					
8	1/12/2007	Art	Bob	Sid					
9	1/1/2008	Sam	Sam	Bob		Visits in last 6 months			
10	1/3/2008	Sid	Art	Sid		Art	1	2	1
11	1/4/2008	Bob	Bob	Art		Bob	1	1	0
12	1/6/2008	Art	Sid	Sam		Sam	0	0	1
13	1/8/2008	Sid	Art	Sid		Sid	2	1	2

two folders where I've previously copied Favorites across. One is C:\Users\<login name>\Favorites, the other is C:\Users\Public\Favorites.

However, copying the folder from memory stick to both of these folders doesn't cause any new links saved from the desktop to appear – at least in the root of the Favorites folder. I'm running Firefox on both machines.

Any ideas what I'm doing wrong?
Martin Dennett

AIf you're using Firefox, then your Favorites folder is irrelevant – that's just for Internet Explorer. Firefox keeps its bookmarks in a file named bookmarks.html and in XP it lives at C:\Documents and Settings\username\Application Data\Mozilla\Firefox\Profiles\xxxxxxx.default. In Vista, it's at C:\Users\username\AppData\Roaming\Mozilla\Firefox\Profiles\xxxxxxx.default.

Fortunately, you don't need to know this. In Firefox, go to Bookmarks, then Organise Bookmarks. This opens a new Bookmarks Manager window (see screen 5), and in that window's file menu, you'll find you can export and import the bookmarks file.

WORD PROCESSING

QI'm trying to produce a Word 2003 document – a theatre programme with a list of characters in the play and the actors playing them. I'd like to do this so that each line is centred; that is, there's a straight column of white space down the centre of the page with the names lined up either side. Is this possible? I was told it had to be in a table, but I can't figure out how.

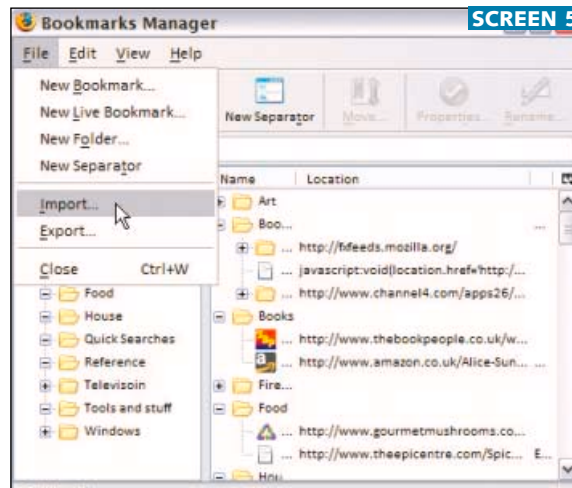
Rod Levine

AThe table method was the only way in early versions of Word, but since Word 97, or possibly earlier, this is much easier with tabs.

First, make sure you're in Print Layout view, with the Ruler turned on (View menu). Next, position the cursor at the line where you want to start the cast list. Click the Tab button at the left of the ruler repeatedly until it turns into a backward 'L' shape. Then click on the numbered section of the ruler to set the right tab to which the characters will align. Now click on the Tab button again, repeatedly, until it changes to a normal 'L' shape, and click again in the ruler to set the left tab for the actors' names.

Press the Tab key and type in the first character name, press the Tab key again and type the corresponding actor. Press Return to get a new line and repeat the process for the second and subsequent characters, not forgetting to start each line with a tab (see screen 6). When you've finished the list, you can fine-tune the spacing by selecting the entire list and dragging the tabs along the ribbon, or for those of a more mathematical turn of mind, setting them from Format, then Tabs.

Q I have two Word problems, which I think may be related. First, when I insert a single horizontal line from Format, Borders and Shading, I get a double line, or rather a long, thin rectangle. Second, when I insert an equation with the



'In line with text' option selected in Tools, Options, Edit, it is replaced by a blank rectangle when I click out of it.

Import and export Firefox bookmarks

If I try to right-click on this, the Format Object menu item is greyed out. If I choose another default insertion option, the equation appears normally and the right-click, Format Object option reappears – but I still can't set it back to 'In line with text'. Even with the blank rectangles on screen, the document prints correctly. Roger Castle-Smith

A Having done some investigation, we found we could duplicate the problem by checking the 'Show Picture Placeholders' in Tools, Options View. This replaces graphics with 'bounding boxes', which explains the horizontal line and equation mysteries. It also seems to cause the formatting restrictions you noted and the objects did appear when printed and in Print Preview. Finally, we also noticed that pictures and objects placed other than in line were not hidden, so there seems to be some inconsistency here. In all cases, turning the placeholders' option off restores civilised behaviour. PCW

Sixes and sevens

DATABASES

Q I want to set the tab order for an object on my Access 2007 form. When I change its property to '6' and tab through the objects in Form view, it is the seventh object the cursor lands on. What's happening?

Ian Johnson

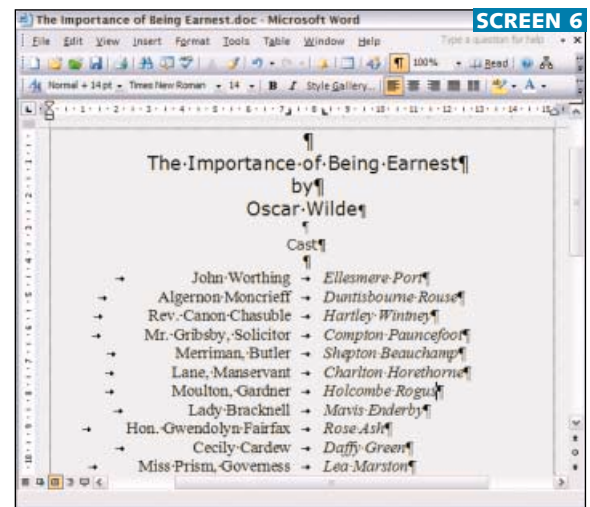
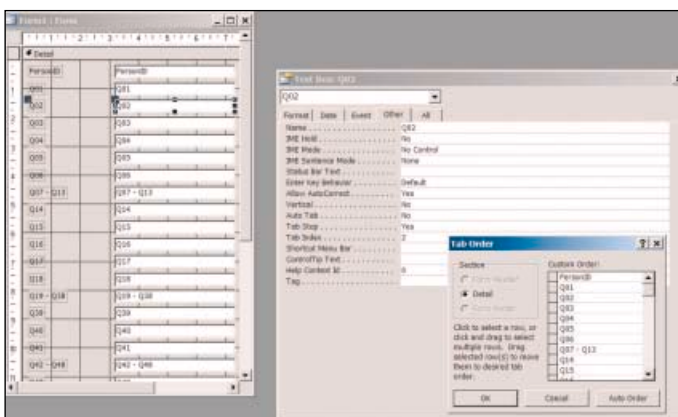
A It's just a nasty attack of geekiness, I'm afraid. Access counts the objects on a form from zero, so when you set the tab order of an object to '6', Access identifies this as the seventh object.

You can see this more clearly if you click the ellipsis button alongside the Tab Index property on the Other tab. A list of objects and their order is displayed, although not numbered, so you have to count to

ascertain the tab order number for each object. You can alter the order by clicking in the grey box alongside the object name to highlight it, clicking again and dragging it up or down the list. Auto Order sets the order to one that could be described as 'reading order', working through the objects from left to right, moving down the form.

The Tab Stop property defaults to 'Yes'. Change it to 'No' and that object is missed out when you tab through the objects (although it still shows up in the Tab Index list). You can access the field by clicking the mouse on it, not by using the Tab key. This answer applies to earlier versions of Access as well as 2007. Just to prove it, the screenshot below is from Access 2003.

Tab order in Access 2003 and 2007



Tabs are the solution to lining up text in this theatre programme

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Gordon Laing has been a hardware enthusiast since his first Sinclair ZX80 and as a former editor of PCW and contributor for over 10 years, what he doesn't know about technology isn't worth knowing.

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Is it time to upgrade?

With Nehalem waiting round the corner, you could just opt for a new platform

Timing is everything when it comes to upgrading your PC. Processor, memory, graphics and disk technologies may be in an almost constant state of gradual enhancement, but every few years comes a significant leap in evolution with a new platform. This could be a superior processor or memory architecture, a new expansion bus or advance in storage technology. Either way, switching to the new platform normally involves a performance boost.

If you're buying a new PC, it's well worth following industry news to see if a new platform is on the horizon, as it's often worth waiting for. However, new platforms can cause headaches for those wanting to upgrade their current system, as they may not be able to re-use many existing components.

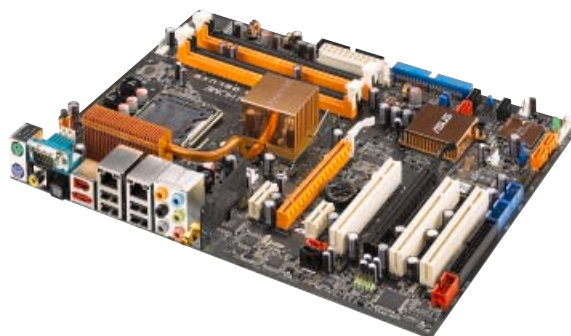
New processor and memory technologies rarely fit into older motherboards, so you may need to replace a significant number of parts. Indeed, if your PC is a few years old, it will often be cheaper to buy a new one if you want the latest technologies.

But the arrival of a new platform can drive the cost of older components down – good news for anyone wanting a more straightforward upgrade, such as a boost in memory capacity.

Inside Intel

So what's coming up? Anyone who follows IT news will know about Intel's forthcoming Nehalem platform, which represents the biggest advance from the chip giant since the Core architecture. Taking a leaf from AMD, the Nehalem will finally integrate Intel's memory controller into its main processor.

There's a new LGA1366 socket (at least for the first versions), which, along with a new chipset, means you'll need to buy a new motherboard, although anyone with existing DDR-3 memory should be able to re-use



The Asus P5W Deluxe motherboard has served enthusiasts and upgraders well. Originally designed for the Socket 775 Pentium 4, it has handled transitions to 65nm dual-core and 45nm quad-core processors

some of it. At the time of writing, we understood the first Nehalem processors, codenamed Bloomfield, will drive DDR-3 memory at 1,066MHz or 1,333MHz. Confirmed compatibility with today's modules remains to be seen, but at least looks hopeful, although to exploit Nehalem's new triple-channel access, you'll need to install Dimms in matched triplets.

As for timing, these first Bloomfield processors should be available in the final quarter of this year. By mid-2009, we should see the second version, codenamed Lynnfield, which has an integrated PCI Express controller, allowing for faster communications with the graphics card. Lynnfield is expected to be followed by Havendale in the second half of next year, which uses further integration of the graphics into the main core.

So if you're thinking of upgrading some aspect of an existing PC, the question is whether to wait for a Nehalem motherboard and processor (and hopefully re-use any DDR-3 memory you might have), or stick with your existing motherboard and identify the aspects that can be updated. As with all upgrades, it's also worth thinking

The excellent CPU-Z utility identifying an Intel E6700 Core 2 Duo processor in the Asus P5W DH Deluxe motherboard. But could it handle a much faster chip?

about where your existing bottlenecks lie and addressing them specifically, rather than just upgrading a component simply because you can.

A while back I identified Ram as the weak point in my own system, so I invested in what seemed a significant amount of memory at the time. Exploiting 64-bit Vista's capability of addressing more than 4GB of Ram, I complemented my existing pair of 1GB modules with a pair of 2GB Dimms, taking the total system memory to 6GB. Handling multiple large images in Photoshop never felt quicker.

Over the past year, though, my focus has shifted from processing still to motion pictures, with video editing placing the greatest demands on my PC. Rendering or converting videos can see my processor maxed-out at 100 per cent for several minutes at a time, and a recent switch to filming high-definition video has only made matters worse.

Greater processing muscle is obviously the key, and like most people, I had to decide whether to wait for Nehalem or make a final upgrade to my existing platform. If my earlier memory investment had been in DDR-3, I'd probably have waited, but wanting to get more use from all that DDR-2, I opted to fit the fastest processor I could in my motherboard.





Intel's Core 2 Extreme QX9650 processor: quad cores, 1333MHz FSB, 12MB cache and a 45nm manufacturing process. Asus' support pages claim it works on the P5 DH Deluxe with a Bios update, but some have reported problems with the combination

The system

My main work PC is based around an Asus P5W DH Deluxe motherboard with a Core 2 Duo E6700 processor and 6GB of DDR-2 memory. This motherboard has been around for some time, and when I first bought it, my processor was a single-core Pentium 4. I was pleased it had successfully handled the transition to the Core 2 Duo 65nm technology 22 months ago and wondered how much further it could go.

Before attempting to upgrade your processor, you should always consult the support section of your motherboard manufacturer's website. There you'll find out what models are supported and what Bios update, if any, is necessary. For Asus motherboards, visit <http://support.asus.com/cpusupport/cpusupport.aspx>, where I found that the March 2008 2704 Bios update should allow the P5W DH Deluxe to support models up to Core 2 Extreme QX9650.

This came as a very pleasant surprise, as I expected 65nm and 1,066MHz FSBs (front-side buses) to be the limit for this ageing board, but here was Asus saying it could handle 45nm quad-core processors running on a 1,333MHz bus with nothing more than a Bios update. Indeed at the time of writing, the Core 2 Extreme QX9650 was Intel's top-of-the-range desktop processor.

Despite this official go-ahead, it's still worth doing a web search to see if anyone else has had any luck with your proposed combination. Doing so revealed a number of people who were successfully running 45nm CPUs on the P5B DH Deluxe, but only a handful who had tried the QX9650. Those who

had were experiencing some issues, but now seemed to be OK. So despite originally eyeing up the 65nm Q6600 for an upgrade, I decided to go for broke and get hold of a QX9650.

The upgrade

While it's tempting to switch components as soon as you get hold of them, it's always worth running pre-upgrade benchmarks first so you have some figures for comparison. Just briefly, my Core 2 Duo E6700 system (with four hard disks) was crunching 10-minute DV AVIs into 80MB WMVs using Windows Movie Maker in five and a half minutes, consuming 209W under full load and 170W when idle; the CPU temperature under load was measured at 35°C, cooled by a Zalman CNPS9500.

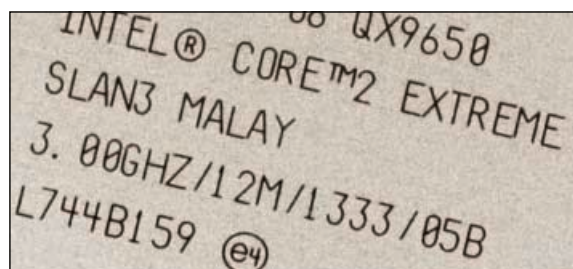
Updating the motherboard Bios to the required 2704 version involved downloading it from the Asus website, unzipping it onto a Fat-formatted USB key, then running the EZ Flash utility directly from the Bios. A few seconds later, my board was ready for action. I removed the heatsink, cleaned its contact surface, swapped the CPUs, applied some thermal paste, then remounted the heatsink.

To some relief, the system posted without problems, correctly identifying the QX9650 and entering the Bios to confirm the settings. At first, the FSB started at 1,066MHz, resulting in a 2.4GHz clock speed with the default multiplier. However, upon restarting, the FSB automatically corrected itself to 1,333MHz, clocking the CPU at its stock 3GHz.

Unfortunately, Vista was less happy. It booted and let me log on, but then it blue-screened and restarted. It didn't even get to the login screen the next time, instead crashing and then subsequently finding itself in a constant loop of blue screens and reboots.

Using a different PC, I rechecked the threads posted by those who had tried the QX9650 on the P5W DH Deluxe, and saw they'd experienced similar problems – they resolved them with a fresh installation of Windows.

A closer look at the specs of our QX9650 sample reveals the 05B revision, referring to the original C0 stepping. According to Asus, the P5B DH Deluxe requires the later C1 stepping, which could explain the problems



Not wanting to lose my existing installation, I fitted a new hard disk and started the Vista setup process, but sadly to no avail. Again after a few moments, the process would blue-screen and restart.

I rechecked the temperatures, bus and memory speeds, but everything seemed fine, so I returned to the Asus support page, where it had suggested the processor should work. It was then that I noticed a small reference to the processor 'stepping' of C1. The stepping refers to a manufacturing revision and wouldn't you know it, the 05B part label on my QX9650 referred to the processor's original C0 stepping.

Now later steppings may be important when it comes to achieving the best overlocks, but I'd not come across a motherboard incompatibility before that could be solved by one. I'm confident there wasn't any damage done to my QX9650, but for whatever reason, my P5W DH Deluxe just wasn't happy with it, so I switched the old E6700 back in and was relieved to find Vista booting without a problem.

Check the forums

So, what's the moral of the story here? First, you need to check not just the processor type when upgrading, but also any further requirements, such as the stepping or revision. Second, you must take heed of those who have been there before you – the forum postings I had found revealed that the QX9650 had not been a smooth ride for my motherboard, so perhaps it would have been safer to stick with something more conservative such as the bargain-priced Q6600, which many owners have been running – and overclocking – very successfully.

I don't feel too bad, though. I got a good deal on the QX9650, it hasn't been damaged and I had already earmarked my Core 2 Duo E6700 for a future upgrade to my media PC – this will now be happening sooner rather than later, with my Asus P5W DH Deluxe motherboard.

Which leaves the QX9650 for a new build of my main computer, with a newer motherboard that has been confirmed to work with it. But again, the question is whether to opt for a DDR-2 solution and recycle my existing memory, or to take the plunge and invest in DDR-3 (with an eye on the future), and a more sophisticated motherboard that would exploit the full potential of the QX9650. I'll keep you posted. **PCW**



Gordon Laing has been a hardware enthusiast since his first Sinclair ZX80 and as a former editor of PCW and contributor for over 10 years, what he doesn't know about technology isn't worth knowing.

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Faster file transfer

One way to send massive files quickly and easily is by using FTP. Here's how

Here's the thing: you've got an urgent file you need to send to a friend or colleague who's too far away to get to in person. How would you do it? If the file is up to a few megabytes in size, email is probably the easiest solution, but what if it's much bigger?

Most ISPs or email providers place limits on the sizes of messages that can be sent or received. Typical email inboxes may only accommodate 20MB of data in total, or even less if you use a budget provider. If you have a premium account, or host your own email, you can increase the size of your inbox, but you'll still need a server at the other end that can send a big file.

Luckily there are alternative methods of sending large amounts of data from one computer to another over the internet. Before going any further, however, first check if the file itself can be compressed.

Assuming your compressed file is still too big to email, what next? Instant messaging clients are a possibility, as most allow you to transfer files directly from one computer to another. I've successfully transferred files well over 20MB using MSN Messenger and it can work quite well, although people at both ends need to be present at the start to initiate and accept the transfer.

Space share

For larger files, or when the recipient isn't present to accept the transfer, try uploading the file using FTP to your own webspace (or any shared online storage), then provide the recipient with an address so the file can be downloaded. I regularly use this technique when delivering work to clients that includes multiple high-resolution photographs, such as those used in the Hands On Hardware column.



So far so good, but none of the files I've personally needed to transfer in the past measured much more than 100MB. But then came the big one, a whopping 2GB TV recording. The first step was compression. As discussed in July's Hardware column (www.pcw.co.uk/2217586), programs such as MCE Buddy (<http://mcebuddy.com>) can significantly shrink Media Center video files using H.264 compression. Several hours of number crunching later and the file had shrunk to 677MB – a huge improvement, but still hefty.

Next came the transfer between two computers on opposite sides of the planet, both equipped with broadband ADSL. The sender had upload speeds of 736Kbits/sec and the receiver had download speeds up to 8Mbits/sec.

I first started trying to transfer the file using MSN Messenger, but noticed it was working out about one megabyte per minute – that would have taken over 11 hours, so I cancelled the process. My next thought was to upload it to shared space, but as I wondered whether the storage would accept that big a file it

Running your own FTP server can allow much bigger and quicker file transfers between PCs than email or instant messaging

was suggested I eliminate the middleman and simply FTP it direct from one PC to the other.

FTP servers

To do this you'll need an FTP server running on one of the PCs. More advanced versions of Windows offer a basic one as an optional component, but for broader compatibility and more features check out one of the many shareware solutions. I used Cerberus' FTP Server from www.cerberusftp.com.

Cerberus quickly guides you through the process of setting up a folder as FTP storage, then configuring one or more users. If you're running a firewall, you'll need to add an exception to allow FTP access on port 21. And if you're using a router, you'll also need to forward any requests on this port to the internal IP address of your PC. The entire process took about five minutes.

At the other end I used the Smart FTP client to download the file, which took eight minutes shy of three hours. That worked out at just under 4MB per minute, or an average speed of 538Kbits/sec over the entire period, which is pretty respectable considering the 736Kbits/sec maximum upload speed. Either way, it was four times quicker than MSN and quicker than uploading to webspace before downloading it again on the other side.

Safety first

Running your own FTP server is one of the quickest ways to get large files from one PC to another, but there are security considerations, as you're opening up one system to the internet. You can configure users with passwords and limit rights, but once the transfer is complete you may still wish to close the server, lock down your firewall and remove the port forwarding on your router to be safe. **PCW**

Legends Never Die....

The NEW SAPPHIRE TOXIC HD4850



RADEON HD 4850



TOXIC
HD4850

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- ◆ DirectX 10.1
- ◆ PCIe Version 2.0
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Tim Nott is a full-time freelance journalist. When he's not writing about Windows and word processing, he tackles many other diverse subjects. He currently lives in France with his wife and family.

→ Comments welcome on the Windows column.

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This month's theme...

Take a look at the future of Windows through retro eyes

It's long been a standing joke in Windows XP that the 'More themes online...' item in the Display Properties Themes list doesn't lead anywhere useful. In earlier days, it led to an advert for Windows Plus, but now the link leads to a page stating that Plus has been discontinued and that "Many of the features and tools that have been enjoyed for years now can be found in new Microsoft titles and services including Windows Vista".

Although there are plenty of third-party themes available, these involve installing further software, such as Window Blinds and/or hacking various system files. Apart from a rather unsatisfactory port of the Media Edition Royale Theme, XP users have been limited to the XP theme, available in garish blue, gruesome olive or ghostly grey.

However, Microsoft has now released a Zune theme (see screen 1) for XP, which at the time of writing, can be downloaded from go.microsoft.com/fwlink/?LinkID=75078. If that doesn't work, a web search for 'XP Zune theme' should deliver. It comes with a charcoal Taskbar, window titles and frames, an orange start button and wallpaper showing an enthusiastic crowd at what seems to be a music festival – or possibly a personal appearance by Steve Ballmer.

You can, of course, change the wallpaper to suit while keeping the rest of the theme.

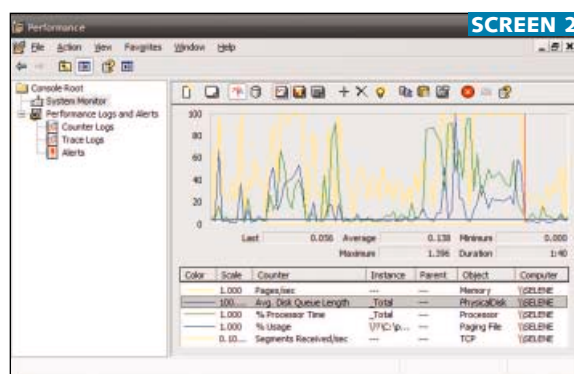
Reliability

The Windows Performance Monitor has been around since NT days, but it's fairly arcane. XP's Performance Monitor shows, by default, a graph of memory pages per second, disk queue length and percentage of processor time, which isn't a lot of use to end users (see screen 2). However, you can

add other counters, such as Page File usage or TCP segments received.

Vista's is a much more splendid affair and incorporates a Reliability Meter. To save yourself a long trek through Control Panel, System and Maintenance, type 'perfmon' into the Find or Run box. The top item in the left pane – Reliability and Performance – shows a Resource Overview, with separate graphs for CPU, disk, network and memory activity, and expanding the bars below reveals a per-program breakdown of this activity. Don't be alarmed at the 'Hard Faults' entries under memory; this doesn't mean you have anything wrong with your Ram. A 'Hard Fault' – also known as a 'Page Fault' – means that a page of memory referenced by Windows or an application is no longer in memory, but has been swapped out to the paging file instead.

The Performance Monitor, the second item down in the left pane, produces much the same as that mentioned for XP, but the item below – Reliability Monitor – is more interesting (see screen 3). This stores data over the past 12 months, showing software installations (or removals), and failures grouped under applications, hardware, Windows and

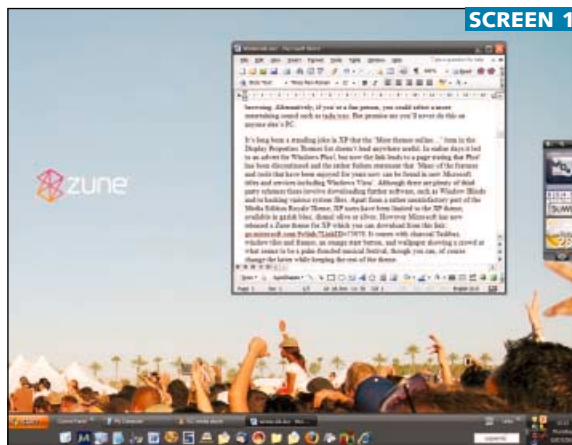


Monitoring XP's performance

miscellaneous. If any installs, uninstalls or failures occurred on a particular day, you'll see a symbol in the timeline and can get details by expanding the bars below it. At the top of the timeline is an overall reliability graph.

Looking back over the past year, I had Word fail twice, Excel once, Internet Explorer once, Explorer once and the Microsoft .Net Framework assembler once. In addition, there were two 'disruptive shutdowns', which can probably be blamed on my electricity supplier. So, it looks as if Vista – albeit by its own reckoning – is pretty reliable. I wish I could say the same about its performance.

At last – a new Microsoft theme for XP



Headers

In September's issue, we took a brief look at the various column headers available in Vista's Explorer and how you can add these by either right-clicking on them and choosing 'More...' or going to the View menu and clicking on 'Choose details'. The choice available, as mentioned then, is vast, but it's also context-sensitive.

If you open Control Panel, Programs and Features, you'll find you can add columns for Support Links, Product ID and more. However, there's a serious flaw here – the URLs for the support links neither function as links



So just how reliable is Vista?

Seven-up

Older readers may experience a twinge of nostalgia watching the (genuine or not) screenshots and Youtube clips (see screen 5). Yes, it's the typographic pun of 'Se7en' – first seen at the launch of the Austin Mini by the British Motor Corporation in 1959.

Further to September's observations on Outlook's inability to print a single page or range of pages, we've had more ingenious workarounds. Tony Cater and Mark Pettigrew suggested clicking the Forward button to produce a new window containing the message, which can be edited, so you can delete all the extraneous text.

Both ways preserve the header and having tried them in Outlook 2007, I found that Tony's and Mark's method had the edge if there was any external content, such as images, on a remote server. The Forward method has the option to include/exclude these, whereas the Edit method compels you to download the content first.

Grab that message

You'll often find that when a message box has the focus, Control & C will copy the text contents. If, for example, you type something into Notepad and click on the Close button, you'll get a message saying, 'The text in the Untitled file has changed. Do you want to save the changes?' Press Ctrl &



C and the text, along with the message title and button labels, will be copied to the clipboard, so you can paste it (as I did) elsewhere.

However, it doesn't always work. If the message is not routed through Windows but generated by a program by itself, you won't be able to copy the text – try the Notepad trick in Microsoft Word and watch it fail. But it's always worth a try, when you see an error message in Windows 2000, XP or Vista.

If you want something more powerful, Snagit offers all sorts of capture facilities as well as editing and annotation of screenshots. Its killer feature, however, is that it will capture text from any window, including the elusive Microsoft Office messages and Explorer windows. It will even autoscroll to capture items out of sight of the window, including web pages. You can download a 30-day trial from www.techsmith.com. For more information on screen grabbing, see last month's Hands On Digital Imaging.

Do you get annoyed by the way Windows makes a clicking sound every time you open a folder in Explorer, or click on a link in Internet Explorer? It's rather like some disapproving functionary tut-tutting as you browse. So why not turn it off? In XP, go to Control Panel, Sounds and Audio Devices (in Vista, it's Sound), turn to the Sounds tab and scroll down the list to the Windows Explorer section. Select 'Start Navigation'. In the Sounds box below, select (none) – the first item in the list – and OK out. This will bring serene silence to your browsing.

Alternatively, you could select a more entertaining sound, such as tada.wav. But promise me you'll never do this on anyone else's PC. **PCW**



Barry Shilliday has worked with computers for almost two decades. By day, he is a Linux and Unix consultant, but in his free time he prefers to travel the world – and snap it with his camera.

→ Comments welcome on the Linux/Unix column.

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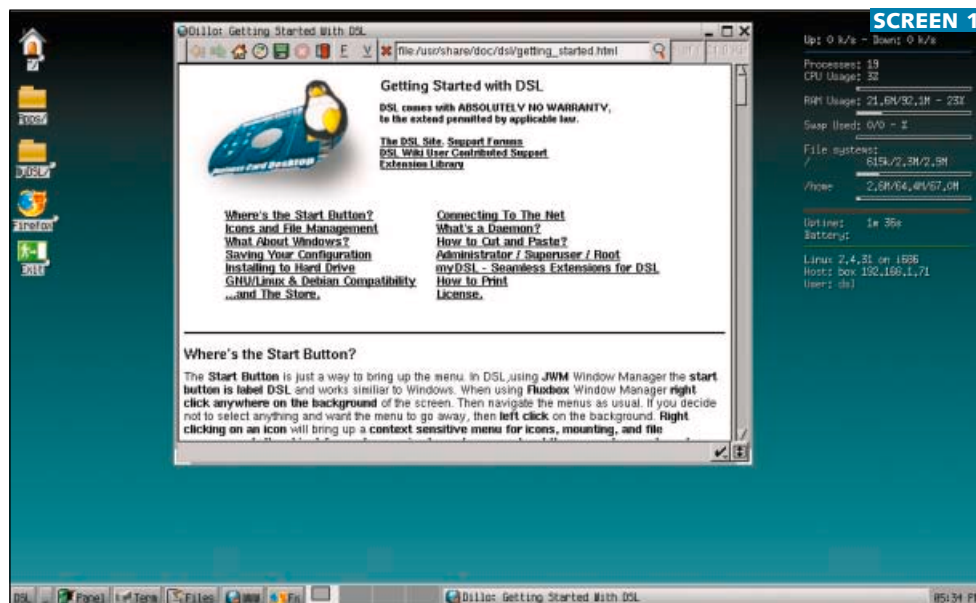
A new lease of life

Find out how increasing memory can enable an old PC to run Linux

A few months ago we looked at running Linux on older machines and how this can make a computer that has been confined to the bottom of a cupboard for a few years useful again.

The recent introduction of low hardware specification ultra-small laptops (or 'netbooks', as they're coming to be known), such as the Asus Eee PC and the MSI Wind, has resulted in a bump in the growth of desktop Linux use. As it is considerably more efficient than Windows Vista and generally performs better than Windows XP on equivalent hardware, Linux has found a niche area and thrives on these devices. However, the 'low' specification of these systems is only low compared with the average modern computer. These machines, typically having 512MB to 1GB of memory and a reasonably fast CPU, are certainly good enough for web browsing, playing DVDs, watching Youtube and so on, and are more than capable of running a modern Linux distribution without problems.

So what about computers more than just a few years old? Reader Graham Steel wrote to ask about his computer. He said: "I have an old IBM Thinkpad installed with Windows 98 and incapable of running newer versions of Windows, with just 96MB of Ram and a Pentium II CPU. I investigated live editions of Linux and decided on Damn Small Linux. I was very pleased it



recognised the PCMCIA network card and everything was up and running straight away."

That sounded all very promising. Unfortunately, though, Mr Steel found he was unable to run Real Player, which he needs to listen to BBC Radio programmes, and wondered if there was any way to get around that. He's in an interesting situation: his computer, with a Pentium II processor, is fast enough to run lightweight Linux distributions. Those such as Xubuntu (www.xubuntu.org) and TinyMe (<http://tinyme.mypclinuxos.com>) are designed for slimmer systems and,

The DSL distribution runs smoothly on computers with less than 128MB of memory

while a low specification computer certainly won't play back high-definition video, for general tasks, any processor – from a Pentium II or later – is sufficient. However, the problem is the memory, and the hurdle is 128MB.

Most lightweight Linux distributions recommend a minimum of 256MB, but will just about get by with 128MB. The usual advice for old computers is to put more Ram inside – an old Pentium II PC with 512MB of memory will work well with a lightweight distribution, and will even manage fairly well with a regular version, such as Ubuntu or Fedora. Unfortunately, though, this isn't always an option: older laptops are often limited with soldered Ram that can't be expanded, or with a maximum total memory of less than 128MB.

So is Damn Small Linux a good option in these cases? Possibly. This distribution is quite remarkable in what it can do. The download is just 50MB, and has a minimum hardware specification of a 486 CPU and 16MB of Ram – yes, you read that right. If the

Lightweight distributions

TABLE 1

DISTRIBUTION	MINIMUM RAM	RECOMMENDED RAM	RECOMMENDED CPU
Damn Small Linux	16MB	64MB	486-Pentium
DeLi	32MB	64MB	486-Pentium
Puppy	48-64MB	128MB	Pentium I/II
Absolute	64MB	128MB	Pentium II/III
Xubuntu	96-128MB	256MB	Pentium II/III+
TinyMe	128MB	256MB	Pentium II+

Hardy Heron.1

If you've kept an eye on the latest Linux news, you may have seen that Ubuntu and its derivatives, Xubuntu and Kubuntu, have now been updated to version 8.04.1. These updated CD images are designed to replace the original 8.04 version completely. The new release is loosely equivalent to a point release of Mac OSX (such as 10.5.4) or a service pack for Windows. The main changes in this version include a fix for a major problem accessing Windows (SMB) shares, an update for the Gnome stable desktop (2.22 to 2.22.2) and Firefox brought from its beta in 8.04 to the stable 3.0 release.

If you've already installed 8.04, there's no need to do anything; the standard system updates will provide all the fixes found in the new CD release. The release is particularly useful for those who have to perform multiple installations, or installations on machines with slow or limited access to the internet, as it saves downloading a couple of hundred megabytes of updates.

computer has 128MB or more memory, the entire operating system can run from memory.

So for truly old PCs – we're talking ones from the early 1990s – this distribution can get them running and browsing the web with Firefox. It includes a surprising number of applications, including rdesktop, which allows you to access another desktop remotely. It can be extended with lots of further common applications that are downloaded and installed with one click from a plain, but easily used, graphical tool. However, having such low requirements, DSL is not the prettiest of distributions, and it certainly has none of the polished feel of a modern desktop. The software is somewhat old, and that can lead to compatibility problems, such as the one with Real Player.

Other choices

As a result, this IBM laptop sits in an area that isn't catered well for in Linux by the major distributions. The computer is more powerful than DSL requires, but its low memory makes it unsuitable for modern systems. A look at Xubuntu's website will show that simply installing the Live CD requires an absolute minimum of 128MB of Ram. So what are the options? Providing you are prepared to run only one application at a time, Xubuntu may just about do the trick.

You're probably wondering why I'm contradicting myself; Xubuntu requires

Xubuntu struggles with less than 128MB of memory, but can run a single application adequately. Here it's running Firefox

128MB to install. This is true for the Live CD, but not for the lesser known 'alternate install'. Unlike the live CD, which allows you to boot directly into a graphical desktop and install from there, the alternate install is a text-based installer and nothing more. As such, it requires a lot less memory to run and will have no problems in 96MB. Every version of Ubuntu has both a 'desktop' (live) and 'alternate' install option, and Xubuntu's can be downloaded from <http://cdimage.ubuntu.com/xubuntu/releases/hardy/release>.

The text-based installer is nothing complicated; it asks the same questions as the Live CD installer. It can set up the partitioning on the hard disk automatically itself, or you can manually perform that step, if necessary. For a low-memory system like this, a swap partition of 512MB is recommended. The installation will take a bit longer, but should otherwise proceed without any problems.

Once installed, apply any updates that are available and again be patient. It uses a lot of memory, and even with 128MB of Ram, this will be a slow process. Be sure not to load any applications until all updates are installed and, if necessary, the system has rebooted. Once booted, on a low-memory system it is important to wait until the disk access stops before trying to load an application; it helps to avoid disk thrashing, where memory is being swapped out constantly and everything consequently grinds to a halt. Now all that needs to be done is for some extra software to be installed. For the absolute minimum, to get better multimedia support, open up a terminal and run:

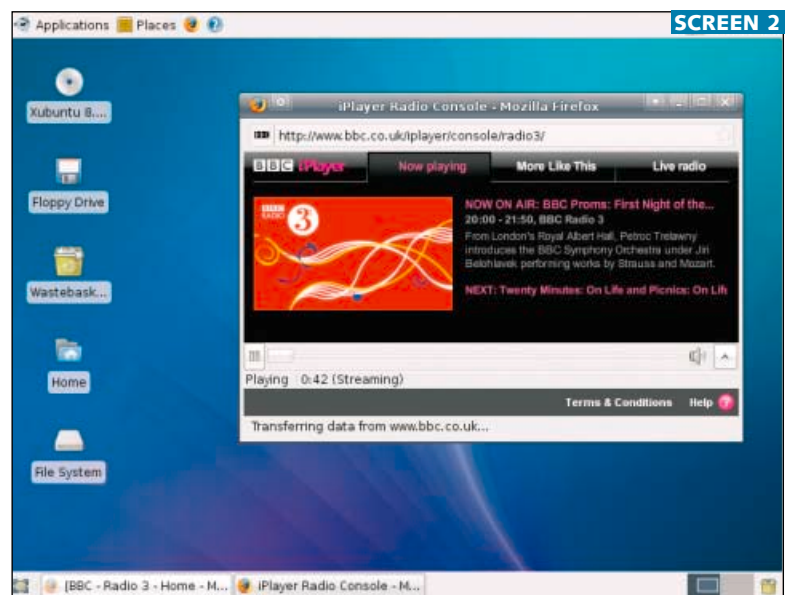
```
$ sudo apt-get install \
gstreamer0.10-plugins-bad \
gstreamer0.10-plugins-ugly \
gstreamer0.10-ffmpeg \
flashplugin-nonfree totem-
mozilla
```

(Key: \ code string continues)

This will download the codecs necessary to play most audio formats, including MP3 and Real's format, used by the BBC. It will also install two Firefox plug-ins – one for Flash and the other for audio/video playback within the browser.

Alternatively, you can install all of these, as well as some extra software, including Java and Microsoft fonts, by loading the Add/Remove Applications program and selecting 'Ubuntu Restricted Extras'. This works exactly the same way as the regular Ubuntu distribution. Many of these extras will simply be too taxing on a low-memory system, however, so don't expect Java or Flash applications to run smoothly – if at all.

The result here is a fully up-to-date desktop with the latest software and a fully secure, completely free operating system running on a computer that could be more than 10 years old. What's more, this desktop computer, being a Long-Term Release version, is fully supported with updates for the next three years. As long as Firefox is run by itself, this system can run adequately on a PC with 96MB of memory, and really very smoothly on one with 128MB. Bump that up to 256MB or more, and you may be surprised at just how well your old computer can run. See table 1 for a list of some of the options available for various older PCs. **PCW**





Ken McMahon is a freelance journalist and graphic designer. His involvement with digital cameras began with a Commodore 64. He graduated to Macs and now works mostly with PCs.

→ Comments welcome on the Digital imaging & video column.
Email digitalimaging@pcw.co.uk
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A tale of two packages

How to choose between Aperture and Lightroom for managing image libraries

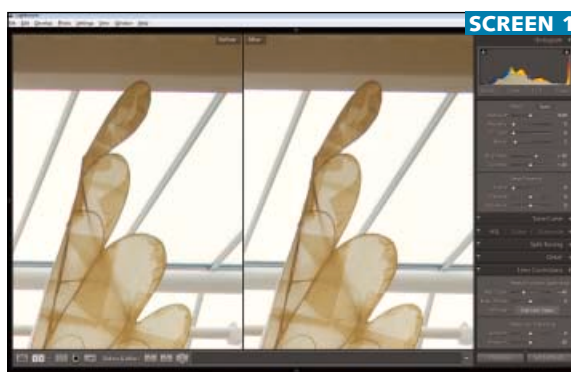
Readers Brian Nuttal, who describes himself as a serious digital photographer, emailed asking whether he should choose Lightroom or Aperture to manage his image library. The debate between the two has been ongoing since Adobe released Lightroom 1.0 and the market in professional image-management applications became more than just a one-horse race.

So, which is better, Aperture or Lightroom? The answer, of course, depends on a lot of things. If you're in the market for a serious photo-management application, you'll have to decide, based on your circumstances. I've used both quite a bit and, as is nearly always the case in this kind of comparison, there is no outright 'winner'; both have their strengths and weaknesses. There's no room here for an in-depth review, but the following comparison of the way Aperture and Lightroom work may be useful if you're having to make such a decision.

The editing and image adjustment features of these applications are the focus of attention, but this being Hands On, I'll finish with a demonstration of the way each deals with recovering blown image highlights.

Hardware

The first issue is, of course, hardware. Whereas Adobe Photoshop Lightroom, to give it its full title, runs on both Windows and Mac OSX, Aperture is a Mac-only application. This will be a deal-breaker for most Windows users, but doesn't rule out Aperture for professional use in a commercial environment, where the cost of an iMac could be justified or if, like Brian, you're upgrading your hardware and aren't locked into Windows. Lightroom is available for Mac OSX and Windows, making it an attractive choice for mixed hardware environments.



Workflow

Aperture 1.0 provided only one way to store images – in its Library package file, which was a turn-off for many who felt more comfortable having their images accessible from the Finder. Now with the option of working with 'managed' or 'referenced' files, you can do it either way. Aperture's database can import your photos into its library or reference them from their existing location. Lightroom works the second way.

Both applications work with virtual images (called versions in Aperture and virtual copies in Lightroom), applying an XML edit list to a master image to create a new version on the fly. Because the XML file is a fraction of the size that a copy of the original image would be, you can create multiple versions with different adjustments and editing applied, without filling up your hard disk. The only time a 'real' image file is created is when you export the file.

Raw conversion

Most Aperture and Lightroom users work primarily with Raw images. Raw conversion is at the heart of both these applications and how they interpret Raw image data to produce RGB images is largely what determines the quality.

Aperture 1.0 came in for a lot of stick over the quality of its Raw converter, but addressed most of the criticisms

Lightroom's tools for dealing with chromatic aberration (fringing) are unsurpassed

Aperture's edit plug-ins, such as Dodge & Burn, expand its repertoire beyond just basic editing

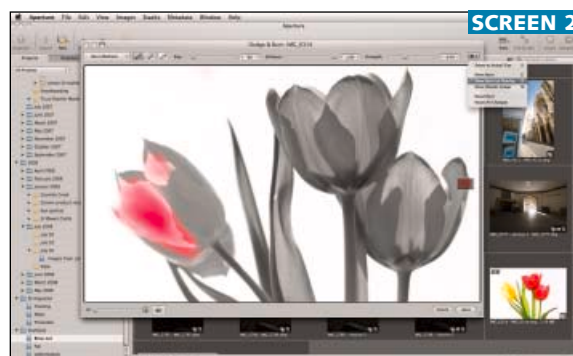
with the 1.1 update. The 2.0 converter in the latest release produces excellent results. Lightroom 1.4 uses Adobe's Camera Raw 4.4 converter. I've used ACR since it was introduced in 2002 and, until Aperture appeared on the scene, there wasn't anything to match it for its ease of use and quality of results.

Both converters support Raw formats from most professional and consumer digital SLR cameras. For a list of supported cameras in Lightroom, visit www.adobe.com/products/photoshop/cameraraw.html and for Aperture go to www.apple.com/aperture/specs/raw.html.

I think there's very little in it when it comes to making quality comparisons between the two. When people express a preference, it's usually down to familiarity. In other words, they've been using one for some time and like what they're used to. If you've operated a Bridge/ACR/Photoshop workflow, you'll find the switch more comfortable as the Lightroom controls are an extended version of what you've worked with in ACR. That said, the Aperture Raw conversion controls and its other image adjustments are very similar to Lightroom's.

Editing and plug-ins

As someone who does a lot of shooting with fisheye and ultra-wide angle lenses (for VR panorama production), one area where I find Aperture falls short of



Lightroom is in correcting for chromatic aberration and vignetting. Lightroom provides separate sliders for red/cyan and blue/yellow fringing, as well as a defringe control (see screen 1). Aperture's Moiré slide is less effective.

I used to think Lightroom was also superior in its ability to recover highlight detail in overexposed images and correct exposed photos that suffer from highlight clipping due to a high subject dynamic range. Recently, however, I've used Aperture extensively to produce several images from one raw file at different 'exposure' settings to produce faux HDR composites; I've been impressed with Aperture's ability to recover highlight detail. When you use the Exposure and recovery sliders in conjunction with the Highlights & Shadows adjustments, the level of detail that can be recovered is remarkable and Aperture has the edge here – for now.

The point of editing tools in applications such as Lightroom and Aperture is not to replace Photoshop, but to provide what photographers need to make images presentable. So you'll find cropping, rotating, red-eye removal, retouch and sharpening tools, levels, exposure and white balance adjustments, but not layers, masks, text, transformations or selection tools. There isn't anything you can do to an image in either application that should take more than a couple of minutes.

There would be little to choose between the two in editing terms, but Aperture's edit plug-ins, introduced in the 2.1 release earlier this year, are already changing the way photographers work with their images.

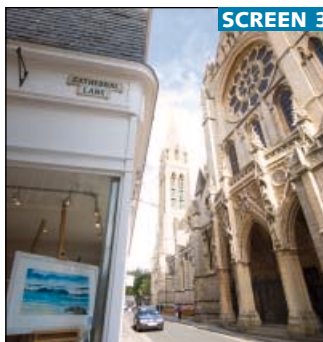
The first Aperture edit plug-in included in the 2.1 release is Dodge & Burn, a sophisticated brush-based tool that provides local exposure control on an editable overlay. As well as dodging and burning, the tool can also be used to selectively sharpen, saturate, desaturate, blur and increase contrast.

Like all current edit plug-ins, Dodge & Burn (see screen 2) works on an exported RGB file, so images are effectively round-tripped to the plug-in and you get a new master image added to your library. However, the Aperture API allows for edit plug-ins that work in the same way as other adjustments – stored as XML data and applied on the fly to create versions.

Aperture edit plug-ins are already starting to appear on the market and include versions of existing Photoshop plug-ins such as Nik Software's Viveza colour-correction tool (www.niksoftware.com/viveza) and Picturecode's Noise Ninja



8-bit TIFFs produced from Raw files using the default conversion settings in Lightroom (left) and Aperture (right)



SCREEN 3

(www.picturecode.com/nn_aperture.htm).

Lightroom plug-ins are currently confined to export functions, such as Jeffrey Friedl's Flickr export plug-in (<http://regex.info/blog/photo-tech/lightroom-flickr>).

Integration

You'd expect an Adobe product like Lightroom to fit well within an Adobe-orientated workflow. In fact, using Photoshop, Elements or any other image editor from within Lightroom or Aperture is straightforward. In either case, an RGB file is exported for editing and then saved as a PSD, added to the library and stacked with the original.

Aperture has a problem displaying previews from layered Photoshop files that contain alpha channels. This problem has existed for a while and, until it's fixed, it could be a problem for anyone who, for example, uses Photoshop to produce cutouts.

Highlight recovery

In my view, one of the best tests of a digital darkroom application is how it performs with overexposed images, or those that are correctly exposed but exhibit highlight clipping due to a high dynamic range subject.

The four images (see screens 3 and 4) show a raw original converted using the default settings, with no adjustment applied in Adobe Photoshop Lightroom 1.4.1 and Apple Aperture 2.1. I then

attempted highlight recovery in each application using the procedures described below.

Aperture

The first step to highlight recovery in Aperture is the Recovery slider in the Exposure brick. On its own, Recovery doesn't appear to do a lot, particularly in extreme cases like this where not only has the sky blown, it's taken the top of the cathedral tower with it. For this image, beyond about 1.0 (the maximum setting is 1.5), further application of the Recovery slider makes little difference.

Next, I used the Highlights slider in Highlights & Shadows. With Recovery applied, this control is more effective than it would otherwise be and at the halfway mark – 50 – all the detail in the tower was restored. There was even some detail in the clouds. Generally, the exposure in this image is good, so I wouldn't adjust Exposure or Brightness, as they would risk loss of detail in the mid-tones and shadows.

Lightroom

Highlight recovery in Lightroom begins in the same way, using the Recovery slider in the Basic controls. Lightroom's recovery slider seems to have a bit more oomph than Aperture's and on its own managed to restore a lot of detail back into the cathedral tower, although it was necessary to drag it all the way to the right until it read 100.

If that doesn't do it, you can drag the highlights slider in the Tone curve to the left – you'll see the top end of the curve adjust itself as you drag the slider and the highlights are remapped.

If you need some help identifying blown highlights and knowing how far to go with recovery adjustments, both Aperture and Lightroom provide highlight clipping overlays. To display the overlay in Lightroom, hold down the Alt key while moving the Recovery slider. In Aperture, hold down the Command key. **PCW**

A cropped section of the same images used above adjusted using highlight recovery tools in Lightroom (left) and Aperture (right)



SCREEN 4



Tim Nott is a full-time freelance journalist. When he's not writing about Windows and word processing, he tackles many other diverse subjects. He currently lives in France with his wife and family.

→ Comments welcome on the Word processing column.

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Live long and prosper

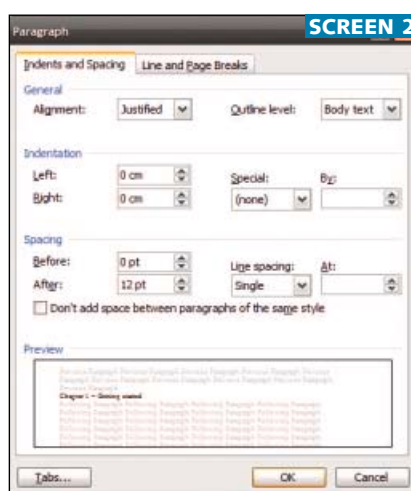
Discover the best way to use Microsoft Word for long word processing projects

In the past few months, we've been concentrating on the layout features of Word – in particular, graphics, columns and text boxes. This month we're going to start looking at the basics of creating long documents, such as books.

So, you want to write a book, a thesis or other long document. If it's a novel, then you don't really need much in the way of word processing goodies beyond a word count, page numbering and a search-and-replace feature should you decide to change the name of your protagonist from Tony to Gordon. Technical documents and other non-fiction requires rather more, though. You'll probably want to split your document into sections or chapters, have running headers and footnotes, an index and a table of contents. We'll be illustrating this with examples from Microsoft Word, but the principles apply to all word processing applications.

Set spacing and outline levels to ensure consistency

Using styles makes things easier



Planning ahead

For long documents, a little planning can go a long way, so rather than plunge straight in, do your magnum opus the favour of having its very own template. This way, you can avoid 'legacy clutter', but you'll still be able to modify the template later when editing documents based on it.

Having created and saved the new template, which we've imaginatively called 'Long document.dot', check that you have the correct default proofing language. In Word 2003 and earlier, this is at Tools, Set language, Language, and in 2007 it's at Review, Proofing, Set Language. Next, think of the styles you're likely to need. It doesn't matter if you later want to add or change a style, the important thing is to employ a set of styles and use them consistently. Promise yourself that you'll only use directly applied formatting for occasional things such as an italicised word or a unique situation, such as a title page.

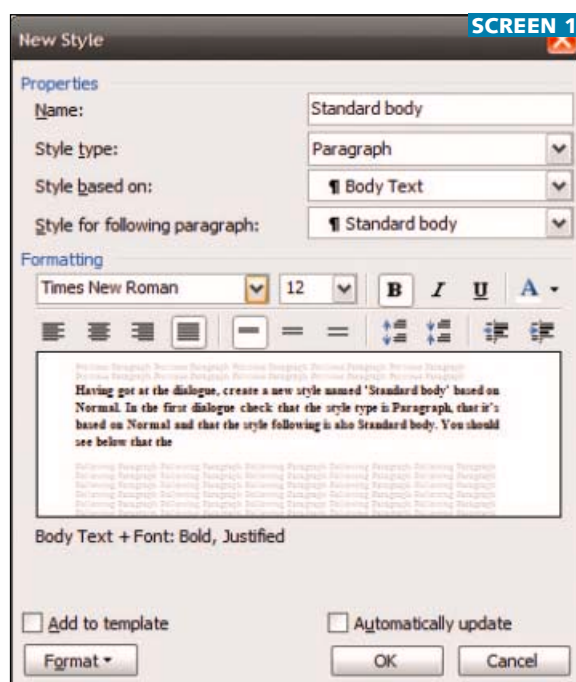
Although you can use the supplied styles, it makes sense to create new ones. You can either base them on existing styles or start from scratch, but in either case, you can give them

distinctive names. We'll keep things simple for now with just three styles, which we'll call 'Chapter title', 'Subheading' and 'Standard body'. Later you'll probably want to add other styles for captions, footnotes, running headers and so on, but this can wait.

Word 2003 and 2007 don't provide direct access to the Styles dialogue – in the former, you have to right-click on an entry in the Styles Task pane to change it and in the latter right-click on the entry in the Styles palette. If you want to get the previous Style dialogue back, which allows you to modify any style or create new ones without having to close and re-open the dialogue, then this is possible in 2003. Go to Tools Customise, Commands. In the left pane, select Format, and in the right, drag 'Style...' (not 'Style:' or 'Styles and Formatting') on to the Format menu or any toolbar that takes your fancy.

Having got at the dialogue, create a new style named 'Standard body' based on Normal, or (no style) if you prefer to start from scratch. In the first dialogue, check that the style type is Paragraph and that the style following is also Standard body. You should see below that the text is left-aligned, single-spaced and 12-point Times New Roman. You can change any of this – you might, for example, want to have straight left and right margins, in which case simply click the Justify button (see screen 1).

Don't worry too much about what this will look like in print – concentrate on getting something easily readable and comfortable to work with on screen. One of the beauties of styles is that you can change them – and all existing instances of text in that style – with a few clicks. As you're working directly on the template, don't tick the 'Add to



template' box: you only need to do this when creating a style from within a document based on the template.

Above all, don't tick the 'Automatically Update' box. This will propagate any changes you make to a paragraph throughout the document, so if you indent just one paragraph, for example, every other 'Standard body' paragraph will jump to one side – I know you have promised not to apply direct formatting, but accidents do happen.

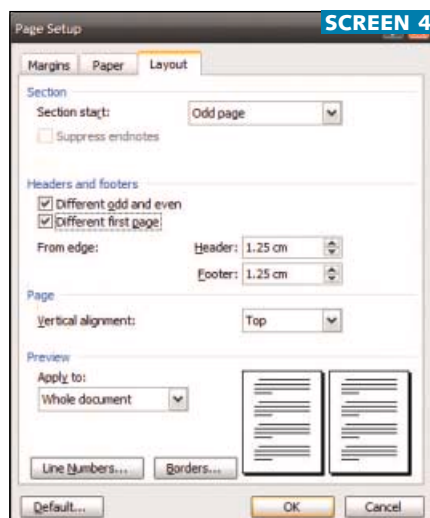
Click on the Format button, then Paragraph, and on the Indents and Spacing tab you'll see the same Alignment value you set previously. The Outline level should be set to Body text. Space before or space after? This is largely a matter of personal preference, but I prefer sub-headings wedged tightly to the following body text. One way of doing this is to set the space after to the point size of the text, giving relief between paragraphs, and the space before to zero (see screen 2). In the Line and Page breaks tab, check that just 'Widow/Orphan control' is checked. This colourful expression refers to single lines of a paragraph appearing at the top/bottom of a page.

Head on up

Next, create the heading styles.

Sub-headings will normally be in a larger type than the body text, so format this style accordingly. Again, it should be a paragraph style and as a sub-heading will normally be followed by Standard body, set this as the style for the following paragraph – that way, as soon as you press Enter after typing a sub-heading, you'll be back in Standard body automatically.

Under Paragraph formatting, Indents and spacing, you could add some space before to make the gap between the previous paragraph and sub-heading somewhat greater than

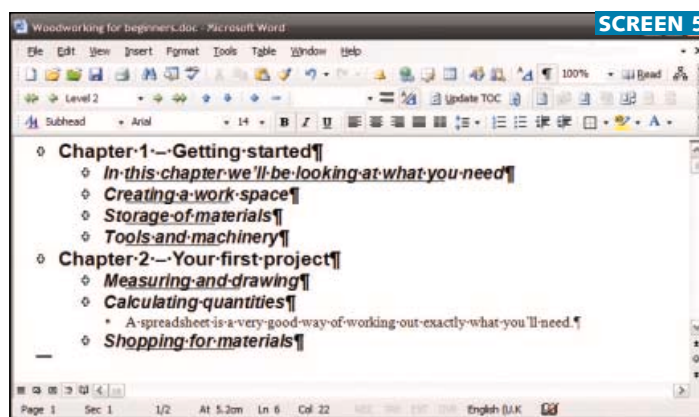


Setting the section start to 'odd page' allows you to start each section on a right-hand page

Headers and Footers options, you'll have the flexibility to align the page numbers with the outside margins, and have the book title and chapter title as headers on facing pages. 'Different first page' will let you suppress headers and/or page numbering on the first page (see screen 4).

Save and close the template and start a new document based on it. Now all you have to do is write the book. This is where properly set up outline levels come into their own. Switch to Outline view and you'll see your document in a hierarchical view, with the levels indented (see screen 5). You can hide and show the various lower levels, which helps in organising your

ideas. Outline view also helps in moving text around – you can drag a heading or sub-heading up and down the page and all the body text below will follow. This is far easier than trying to select and move large chunks of your document in normal or page layout view. The interface for Word's outliner takes getting used to, as the 'next paragraph' style setting



Outline view shows all the levels of your document tracking

normal paragraph spacing, but the really important thing is to set the Outline level to Level 2. On the Line and Page breaks tab, make sure 'Keep with next' is checked, so you won't get a sub-heading at the bottom of the page with nothing to head.

Finally, create the Chapter heading style with an Outline level at Level 1. You can, if you want, add a Page break before, but there's a better way, as we'll see shortly. You can also give styles a keyboard shortcut (see screen 3). I've set my templates to use Alt & 1, Alt & 2 etc for the various heading levels and Alt & 0 for body text.

Now you've got your styles in place, go to File, Page Setup – in Word 2007 you'll find the dialogue by clicking the arrow next to Page Setup in the Page Layout ribbon. Set the paper size and margins to whatever you want – you can change this later – and turn to the Layout tab. Set the Section start to Odd Page. Now, when you terminate each chapter with a section break, your next chapter, as per publishing convention, will start on a right-hand page. If you choose 'Different odd and even' in the

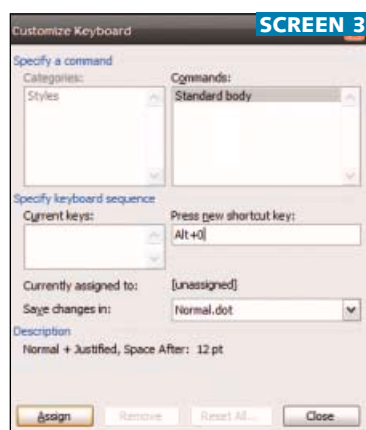
is often ignored, but it's easy enough to promote and demote levels using the toolbar buttons.

Play safe

You'll be investing a lot of effort in your book, so do safeguard it. Save often and create backups – not just on your PC, but also on removable media stored at a different location, or online storage. Save backups in both .doc (or .docx) and RTF formats – the latter is easier to recover should a file corrupt.

Word's Master Document feature may sound like a good idea – you can create each chapter as a separate document and use a Master Document to index the collection. However, Master Documents have a poor reputation and they have two states – corrupt or about to become corrupt.

Next month we'll look at some more advanced features for long documents, such as footnotes, indexing and tables of contents. For now, we have just enough room for a brief postscript: regular word processing correspondent Jean Elliott wrote in to say you can save four mouse clicks by pressing Ctrl & Shift & Enter to create a column break. **PCW**



Give your styles shortcut keys



Stephen Wells is a freelance journalist and a regular contributor to computer magazines. He's been writing PCW's Spreadsheets column for over 10 years.

→ Comments welcome on the Spreadsheets column.

Email spreadsheets@pcw.co.uk

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Simple project management

Use Excel to make sure things run according to plan, and explore Smart tags

Whatever job you need to do, in the office or at home, it's usually beneficial to plan in advance how long it will take and when each participant needs to get involved. This example shows a work schedule for remodelling a kitchen or bathroom using Excel. The anticipated jobs are entered in the range B4 to I4 – in this case, stripping out the room, plumbing, electrical, plastering, carpentry, flooring, installing fixtures or appliances and decoration.

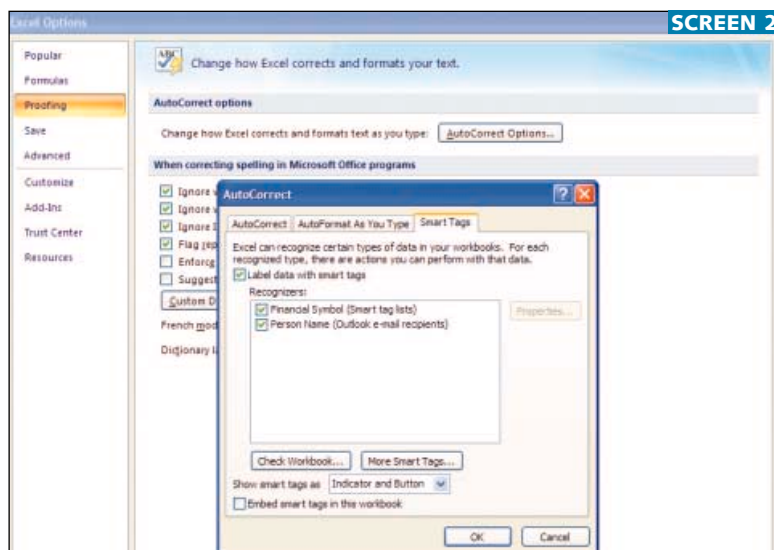
The number of days each job is expected to take is entered in the cell beneath each job label, along row 5. By laying out the worksheet this way, it makes it easy to instantly change the schedule if any trade falls behind.

The holidays, or any days when work is not expected to take place during the year, are entered along row 8. In the example, it's the bank holidays for 2009.

The start date of the job is entered in cell B2. Again, if the start day should change, the entire project can be rescheduled automatically.

The only function needed is WORKDAY, which excludes Saturdays and Sundays by default, plus any other days you want to take off work. It is included in later versions of Excel and is in the Analysis Toolpak add-in with earlier versions. It has three arguments: a start date, the number of days and holidays. In cell B6, enter **=WORKDAY(B2,B5,\$B\$8:\$I\$8)**

Picking the Smart Tags to display in Excel 2007



You can enter the holiday range as B8:I8, then in the Formula Bar, click on B8 and press F4 and it will change to \$B\$8, signifying an absolute reference. Do this again with I8 in the Formula Bar.

This is more important with the entry in cell C6, **=WORKDAY(B6,C5,\$B\$8:\$I\$8)** when you drag that formula along the row to cell I6, which will read **=WORKDAY(H6,I5,\$B\$8:\$I\$8)**. The references for the first two arguments will change, but the third argument won't.

Enter the other labels in column A, give all the dates the custom format of your choice, and the job's done. If you would like to show the total number

of days taken for the job overall, enter **=I6-B2** in cell K6 and give it the custom format **#" days"** (see screen 1).

This is a simple worksheet, but it's flexible enough to allow you to change the start date, the days to omit – such as unexpected sick days – and vary the number of days for any job segment.

Smart tags

Excel users are probably most familiar with Smart Tags appearing when they have an error in a cell or when they paste data into a cell or range. But there's also an optional version that provides links to other data.

Under the AutoCorrect options is a Smart Tag tab for activating them. In Excel 2007, the keyboard shortcut to the tab is Alt & F then I, P or go to Office\Excel Options\Proofing\AutoCorrect Options\Smart Tags (see screen 2).

If you want them to appear, check 'Label data with smart tags'. In the Recognisers box, the number of items

SCREEN 1

	A	B	C	D	E	F	G	H	I	J	K
1	Completion dates for remodelling										
2	Start date:	Mon Apr 6									
3											
4		Strip	Plumbing	Electrical	Plastering	Carpentry	Flooring	Fixtures	Decorate		Total
5		2	3	3	1	3	2	3	2		
6	Finish by end of day:	Wed Apr 8	Wed Apr 15	Mon Apr 20	Tue Apr 21	Fri Apr 24	Tue Apr 28	Fri May 1	Wed May 6		30 days
7											
8	Holidays:	Jan 1 09	Apr 10 09	Apr 13 09	May 4 09	May 25 09	Aug 31 09	Dec 25 09	Dec 28 09		
9											
10											



available will depend on the settings on your computer. In the illustration, only Financial Symbol and Person Name are shown, but you may also display others such as Date, Measurement Converter, Telephone Number or Time. The Smart Tags appearing in your workbook will depend on the items checked here.

Smart Tags can appear with an indicator and a button or a button only. With financial symbols selected as an option, if you type IBM in a cell and click on the automatically displayed Smart Tag, you're given all the choices shown in screen 3. Stock prices shown are from the New York Stock Exchange and are up to date, with only a 20-minute delay.

Microsoft and Worldlingo offer a small 67KB file to download that will help create Smart Tags for accessing translation services and country-specific data about international business practices. See www.worldlingo.com/microsoft/smart_tag.html.

But you're not limited to links to Microsoft affiliated sites. Just click More Smart Tags in the AutoCorrect dialogue box and you can obtain software from companies such as Avery for creating labels or Connection Concepts Incorporated's Dataportal for linking to any enterprise database.

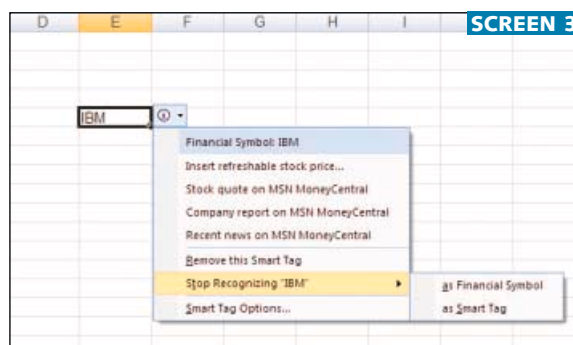
At the risk of infringing on Tim Anderson's territory, I would make mention of the fact that software developers capable of writing Component Object Model (COM) call-back-style add-ins can create their own Smart tags.

Smart tags are COM dynamic data libraries (DLLs), not scripts. They recognise Microsoft Office security settings. You can get more information from the MSDN website or try Add-in Express at www.add-in-express.com/add-in-net/smart-tags.php.

Cash formats

There are only small differences between the Currency format and the Accounting format in Excel, but once you've settled on one, you'll want to stay with it throughout one document for consistency. In Excel's history the Currency format came first. The chosen symbol, like a pound or euro sign, is close to the left of the number. The accounting format displays the symbol to the far left of the cell with space between it and the amount. There's also a padding space to the right.

Both formats show the fixed number of decimal places that you



choose and both insert a comma after the thousands. If you wish to use parentheses instead of a minus sign for negative amounts, you can choose this under the Currency tab of the Control Panel's Regional Options. It will be recognised by the Accounting format, but not the Currency one.

Another anomaly is that the button on the Formatting toolbar, called Currency, doesn't offer the Currency format but the Accounting one. This is no problem with Excel 2007, because there's a box above with a dropdown arrow for quickly selecting formats, but if you have an earlier version, you may wish to correct this.

Enter a number in a cell. Click on the cell and then on the Currency button. On the Format menu, choose Style. Click the Modify button and choose Currency. The button will now produce the Currency format on any worksheet in that workbook.

Better name calling

Imagine having an Excel workbook with lots of formulas that included 17.5 per cent to calculate Vat. And supposing the Government changed the rate to 20 per cent. Nightmare! But if you had used Vat as a Name in all those formulas, all you'd have to do is change the definition of the Name and everything would be hunky dory.

A Name can be used instead of a reference to a cell or range, or a formula or value. By default, a Name applies throughout a workbook. It can be useful, although to have a Name means different things on different worksheets. For example, you could have a workbook with four worksheets labelled Spring, Summer, Autumn and Winter. And you might wish to apply a different discount in each of the four seasons.

On the Spring worksheet, for example, the Name 'Discount' might refer to 20 per cent. The same Name might mean five per cent on the Summer sheet, 15 per cent on the

Autumn sheet and 10 per cent on the Winter sheet. The Vat Name could represent 17.5 per cent throughout the workbook.

In Excel versions prior to 2007, to define a Name for one worksheet all you have to do is precede the Name with the relevant sheet name and an exclamation mark. So, to create the Name for the Spring discount, you would call it Spring!Discount and give it the value of 20 per cent. Excel will store the value as 0.2.

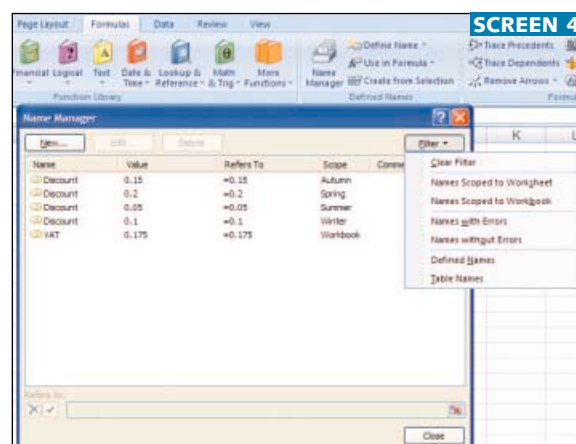
Excel 2007 makes it easier to set the boundaries of Names. It introduces the term 'Scope' to define whether a Name applies to a worksheet or throughout a workbook.

To create a Name, you can use the Name Manager: either click on its button under the Formula tab on the Excel ribbon or use the shortcut Alt & M, then N. Click the New Name button to display the New Name dialogue box. In the 'Name:' box, enter Spring. In the 'Scope:' box, it will say 'Workbook'. But there's a down-arrow that will display all the file's worksheet names as they appear on the tabs. Select Spring. In the 'Refers to:' box, enter either 20 per cent or 0.2. Click OK. Repeat this simple procedure for the other required Names.

Back in the Name Manager box, the Names will be listed with their values. If you just wish to see the worksheet Names, click on the Filter button and choose 'Names Scoped to Worksheet'. You can also display the Names that apply throughout workbook. To show all the Names without restriction choose 'Defined Names' (see screen 4).

Back on the Spring worksheet, enter **1000*Discount** in a cell and it will display 200. Do that on the Summer worksheet and it will display 50. **PCW**

You can filter the Names displayed in the Name Manager





Nigel Whitfield edited computer magazines before going freelance in 1995. A specialist in internet and consumer issues, he has a degree in Computing Science from Imperial College.

→ Comments welcome on the Web development column. It returns in the Christmas issue. [Email webdev@pcw.co.uk](mailto:webdev@pcw.co.uk) Please do not send unsolicited file attachments.

Strings and things

Foreign characters, SQL injections and the downside of the mobile web

This month, I'm looking at a clutch of conundra I've come across on various websites. First up is SQL injection attacks. I'm quite a fan of using PHP and MySQL to create sites, and I also like the ease with which tools such as Dreamweaver can help you create pages that request information from a database. You can build a page that lists all the parts in your database, for example, and then add a dropdown menu that filters by category, just calling the same page again with a parameter.

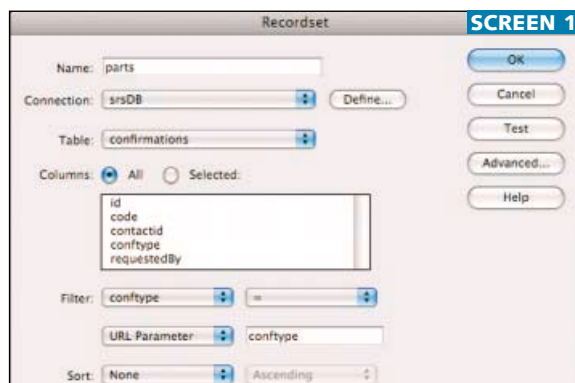
But this is where problems can creep in. You might have a page, which started out as something like `partslst.php`. You've decided to add a dropdown menu and refine the query in Dreamweaver, which makes it easy to check a query string and select data based on that (see screen 1). So you end up with a script with a URL that looks like `partslst.php?catid=brakes`.

You check the PHP code and see something that looks like this:

```
$colname_parts = "1";
if (isset($_GET['catid'])) {
    $colname_parts =
(get_magic_quotes_gpc()) ?
$_GET['catid'] :
addslashes($_GET['catid']);
}
```

(Key: ↵ code string continues)

Dreamweaver makes it easy to search a database based on a query string, but watch out for security



The addslashes function stops people putting any funny business in there, doesn't it? Well, no. It puts slashes before quotes, but that's it. Doesn't PHP's MySQL function allow only one command at a time, helping prevent problems? Sort of. There are many ways to get useful information from a script without needing to add an extra query. The UNION command in SQL is a favourite.

Dreamweaver will typically assume that the `$colname_parts` variable is OK and build a query incorporating it, which will look something like this:

```
SELECT partno, name,
description, category, price
FROM parts WHERE category = %s
```

replacing the `%s` with the variable. Then someone comes to your site and feeds it a query string that looks like so:

```
catid=-9999+union+all
+select+1,concat(
username,char(58),email),3,
null,5,6,null+from+users-
```

The result? If there's a table called `users`, with a `username` and `email` column, they'll get a handy list of users, followed by a colon and then their email address. So, how can you stop this happening?

First, always validate data before feeding it straight into a database query. The basic protection added to a script by Dreamweaver isn't enough. If there are only certain values that can be used for the category, check for them. And if the only possible values are numeric, use that to your advantage. PHP contains a function called `is_numeric`, which you can use to check if it really is just a number you've got, or you can use `intval` to extract the numeric part of a string. Either would protect your script.

To see what people are trying to do to your server, add a short snippet of code like this, before the query:

```
if ( isset($_GET['catid']) && !
```

```
is_numeric($_GET['catid'])) {
    // send an email to
admin
    $errbody = sprintf("A
script was called with invalid
parameters\nRequested URL:
%s\nOriginating IP: %s\nQuery
string: %s\nReferrer: %s\n",
$_SERVER['REQUEST_URI'],
$_SERVER['REMOTE_ADDR'],
$_SERVER['QUERY_STRING'],
$_SERVER['HTTP_REFERER'] );
mail('admin@mysite.com',
'Script error',$errbody);
header('Location:
/index-error.php');
exit;
}
```

(Key: ↵ code string continues)

This will redirect the visitor to the page `index-error.php`, where you can issue dire warnings, or just say, "Sorry, you typed something wrong."

Obviously, you can't use such a simple check if `catid` can be a range of words; instead, you would need to use something like this:

```
( $_GET['catid'] != 'brakes' )
&& ( $_GET['catid'] != 'fuel' )
```

Strings and things

There are other gotchas, of course.

First, `mysql_real_escape_string` will get rid of some of the nasties that can be added to a query and won't be spotted, such as encoding a semicolon in hex, so a secondary query can be added. But unless you have the latest MySQL libraries on your server, there may be a bug, which means it's vulnerable. The biggest vulnerabilities come when you allow users to enter information into your site and you can't determine the format beforehand.

Make sure scripts that update or insert information are the only ones

Costing the mobile web

Browsing on mobile phones has become much better in recent years, with quite a few phones making a decent stab at downloading pages and rendering them on a small screen.

But there are still data charges for downloads; while you can pay £15 for 3GB of downloaded data at home, venture across the channel and you'll pay a few pounds per megabyte – hundreds of times the cost of downloading the same information a few miles away, via a network that in all probability is owned by the same company as

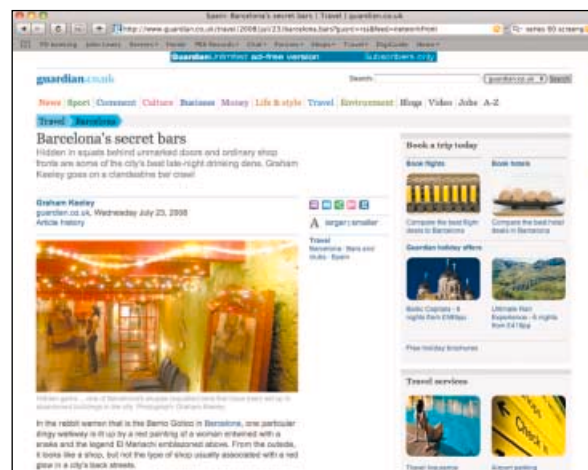
This may be the ad-free version of the Guardian, but there's still plenty of content that mobile users have to pay for

the one you use in the UK.

As a web designer, you can probably help by detecting common mobile browsers and using a different style sheet, or even not sending graphics.

As the screen above right shows, a page from the Guardian's website, even using the subscription no-ads version, can still amount to 600-800KB of data. And surprisingly, turning off the loading of images in the browser doesn't save a huge amount more. The mobile browser image (left), on Barcelona's bars, still clocked up over 400KB to download. With roaming charges of a few pounds per megabyte, neither of those two screens is cheap.

If your pages are generated on the fly by scripts or a CMS, it's worth checking the User



Turn off the images and there's still 400KB of data downloaded

Agent, or simply offering people the choice of a 'light' page layout. However, the Guardian's no-ads option still shows travel services, sponsored features and other material in the right-hand column of the pages, which may be tolerable at home, but costs more when you're roaming abroad. The same is true for large chunks of Javascript.

If you've been caught out by high bills for roaming, don't just grumble – use them as a spur to make sure your own site isn't doing the same to other people.

that run with a user ID that's able to change the database. And if there's only one table in your database that visitors can change – for example, comments – make sure that's the only table that can be updated or added to by the user ID used in the script, and don't allow that user ID to do anything else.

You might want to do some basic checks on text, too. Watch out for words such as Union, Select, and other SQL keywords, plus codes such as 0x, used to introduce a hex character code. A simple `preg_match` will help trap some basic attempts at injecting info into the database.

I'd also heartily recommend a thorough read of the page on www.php.net for `mysql_real_escape_string`, where there's a detailed discussion on cleaning data before it goes anywhere near your database. So keep permissions tight, keep parameters to scripts as simple as possible, and check that they only contain allowed values.

¿Qué?

A second conundrum is a problem with foreigners. Or, more specifically, with some of the letters that have accents and diacritical marks in assorted languages.

One site I work with has a member directory for a professional organisation. The version on the site shouldn't really go by a name as grand as a database; it's essentially a text file, in CSV format, that has been exported from a database in someone's office and uploaded to the website.

A form on the site allows people to specify what they're searching for – name, city and so on – and then a Perl script reads through the text file, spitting out an HTML page header, followed by nicely formatted information for the matching entries.

It does the job, but as there are more and more international members, there's a need to make sure that their names are not only presented correctly on the web page but can be found by searching too.

The first issue is solved by a search and replace each month, swapping single characters in Word for the matching HTML equivalents. For example, ö is changed to ö, and where someone searches for a result that includes that character in, say, the address, then it's displayed OK.

But how do they search for a name with a foreign character? That needs the script changing to look for the appropriate entity. In PHP that's a

trivial thing to do, with specialised functions that work in both directions, and in Perl a little magic with regular expressions should do the trick.

There's another problem, though. A lot of words become Anglicised, and with a city such as Paris it makes no difference to the spelling. With others it does – Zurich and Zürich.

You probably need to be consistent when you enter information; either always Anglicise foreign town names, or never. In this case, that means persuading the keepers of the database to change lots of information, which isn't always possible.

My first instinct is to say, "Stick it all in a proper database." MySQL can take the data and foreign characters, and PHP can manage the translations to and from HTML entities.

But what about the searching? There are 'soundex' functions in both PHP and MySQL that will help with finding words that sound similar, but tools such as that tend to be based on English pronunciation. So, if any readers have a solution, I'd love to hear from you. How can you ensure that all the people in Zurich can be found, however the search term is spelt? And how would you deal with spellings as different as Cologne and Köln? **PCW**



Alan Stevens has implemented and supported networks for over 25 years, working for IT vendors, system integrators and customers. He now mostly researches and writes about networking matters.

→ Comments welcome on the Networks column.
Email networks@pcw.co.uk
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Working with WHS

How to set up an HP Media Smart box with Windows Home Server

More about Windows Home Server (WHS) this month, starting with the news that HP has lent me one of its Media Smart boxes. Designed to run the WHS software, this little device makes getting started with a Microsoft home server a lot easier. It also takes up much less room compared with the ageing desktop machine I previously pressed into service (as reported in last month's Network column), with a tiny chassis and no local monitor, keyboard or mouse to worry about.

On the downside it's not cheap. The single-disk ex470 model I've got has a capacity of just 500GB yet sells for a penny under £400, for which you could buy a much faster desktop with lots more storage space.

All Media Smart servers have just 512MB of Ram and a cheap and cheerful AMD single-core Sempron 3400+ processor, but that's really all you need. In many other respects it's a nice unit, especially when it comes to storage, with four hot-swap drive bays behind its protective front door. The drive bays come ready-fitted with trays and can take any Sata (serial ATA) disks, so you could potentially save money by obtaining extra disks separately rather than going for one of the bigger capacity models. Additional disks are a good idea when it comes to taking advantage of folder duplication and the other Drive Extender options I outlined last month.

You can also plug external drives into the Media Smart server, using either USB or a much faster eSata interface. There are four USB ports – one at the front and the remaining three round the back, together with a single eSata connector and Gigabit Ethernet port.

The WHS software comes ready-installed, so to get started you just plug

the HP server into the Lan then run a custom startup wizard from a network PC. This will install the WHS Connector, then connect you to the server where a console assistant will guide you through the basic steps needed to configure it.

Recover to cover

Notice, however, that I've not mentioned a DVD drive in the Media Smart server which, on the face of it, would leave you stymied if anything were to go wrong. To this end you also get a special recovery DVD, ready to pop into a network PC and run a custom remote recovery program. Press a hidden button on the server when prompted and you can either recover the server, leaving all your data, backups and settings intact, or return completely to the factory setup, in which case all data will be lost.

There are also some differences when it comes to the software setup. It's still Windows Home Server at



HP adds a few extras to Windows Home Server, plus a new page on the WHS console to manage them

The specification is modest but the tiny Media Smart server has four hot-swap bays to take Sata hard disks of your own choosing

heart, based on Windows Server 2003 R2, but with a few HP-inspired tweaks and third-party add-ons. Among these are an iTunes server to stream music to Apple iTunes players and HP Photo Webshare, which lets you share photos both over the Lan and via the internet.

There's also an extra Media Smart page in the WHS console from which these add-ins can be configured (see screen 1), along with a tool to dim the LEDs on the front of the cabinet and another to configure HP's own automatic updates option. Remote access will also be enabled by default and the settings managed from here, while deeper inside the GUI there's a tool to monitor the HP hardware.

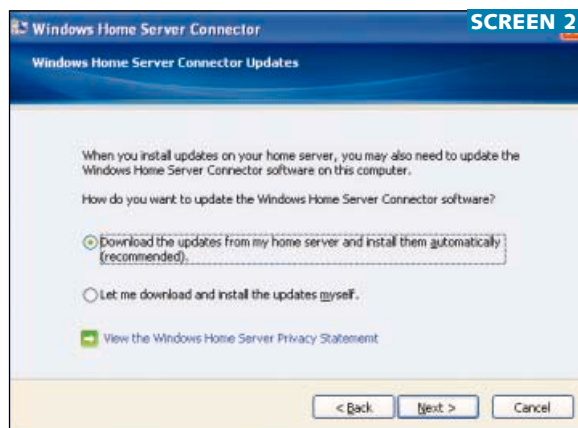
Apart from all that the Media Smart server works just like any other machine running WHS. As such it will be able to take advantage of the forthcoming Power Pack 1 update, which may well have been released by the time you read this.

At the time of writing, however, the software was still in public beta, although being of a brave – some might say reckless – disposition I downloaded and installed it to see what it had to offer. Not, I hasten to add, onto the HP Media Smart server but my own desktop PC creation.

Installing the Power Pack

When the WHS Power Pack 1 (PP1) update is fully released the software





will be distributed and installed automatically via the Windows Update service. With the beta, however, I had to download the software and perform a manual install via remote desktop. This was quick and easy, and worked as expected, although it's worth noting that if you try this yourself you will have to manually uninstall the beta software later on before the release software can be loaded.

On the client side a new version of the WHS Connector is included in the Power Pack update. Existing clients will still work, enabling users to access shared files, backups to be taken and so on. However, to get the full benefit of the update the new connector needs to be used and a pop-up will be displayed on each home computer telling you that this is necessary.

For now the connector has to be updated manually by following a link to the shared software folder on the server and running the setup program found there. Once the Power Pack update has been applied, however, any further changes needed to the connector (Power Pack 2 perhaps?) will be pushed out automatically, making life a whole lot easier.

I installed the new connector manually and noticed a couple of differences in the procedure. The first was a dialogue box asking whether I wanted future updates to be downloaded from the server automatically, as described (see screen 2). The other was the ability to wake the client, either from sleep or hibernation mode, in order to take backups. This will be particularly useful on laptops but also helps if, like me, you hibernate your desktop overnight to save power. You may find it's left turned on after the backup has finished, but if you schedule it for early morning that could even be a bonus.

Post-Power Pack 1, the WHS connector software will be able to get its updates from the home server

Lastly, there's one other big change on the connector side – the ability to install the software onto a PC running 64-bit versions of Vista. But not 64-bit Windows XP, at least not in the beta.

So what's new?

If you're expecting obvious changes with PP1, you'll be disappointed. It looks and feels much the same, with most of what's been altered going on behind the scenes, mostly centred around the storage options and the way WHS handles multiple disks.

Among the bug fixes, the well-publicised data corruption issue affecting some multidisk home servers has been addressed. Gone too is the annoying Balancing Storage message that was always displayed in the WHS console when more than one disk was installed. A more sensible algorithm is now used when deciding when to migrate and balance files between disks, and now you're only informed when balancing was last done rather than when it's happening. Performance too has been enhanced, although, as balancing is all done on

the server and in the background, you don't really notice anything.

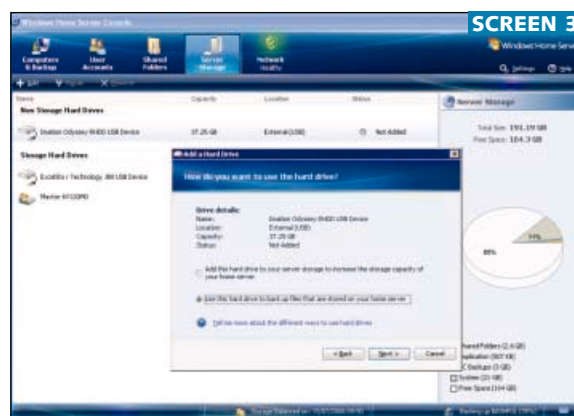
Elsewhere, the way WHS calculates free and used disk space has been changed to make it more accurate. However, the biggest and most eagerly anticipated improvement is the addition of a new server backup tool.

With the current RTM software, data held on client PCs can be backed up to the server. With PP1 the data held on the server itself can also be backed up to an external disk. Note, however, that you can't, as originally planned, include the database of client backups in the server backup process – it only lets you take backups of shared data.

Taking a backup

To take advantage of the new server backup facility you need to tell WHS that you want to take backups when a disk is added. In screen 3, I've plugged in an Imaton Odyssey removable USB storage device and am being prompted as to how I want to use it – either for extra storage or to take backups. It's an either-or option (you can't do both), after which you're asked if you want to format and label the disk for use.

Backup disks are listed under a new category on the Server Storage page, entitled 'Server Backup Hard Drives'. To take a backup go to the Computers and Backup page, where the home server will have been added to the more usual list of desktop PCs. Click on the Home Server entry and you'll find you can only take an immediate backup (Backup Now), rather than leaving WHS to decide when to do it. Backups of desktop PCs are suspended while the server backup is run. **PCW**



You have to tell WHS that you want to take backups when you add a new disk

Making Vista see Samba

Several readers have emailed me about a recent networking feature (Network Harmony, PCW August 2008), where I outlined a solution for Vista users having problems connecting to network-attached storage appliances running older versions of Samba (prior to V3.0.21).

The solution involved changing the Local Security Policy on the Vista PC to use the older NTLM and LM-authentication protocols rather than the default NTLMv2 employed by Vista. However, as pointed out by a number of

readers, Home versions of Vista don't include the tools needed to make this change.

Fortunately, there is a workaround and you should be able to get the same result by editing the Registry. The key that needs to be changed is HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa.

Navigate to this using Regedit (take a backup first) and if it doesn't exist, create a DWORD value called LmCompatibilityLevel and set its value to "1". Apologies for any confusion I may have caused.



Mark Whitehorn is one of those lost souls who actually likes databases. He splits his time between consultancy, writing, working for two universities and tinkering with old cars.

→ Comments welcome on the Databases column.
Email database@pcw.co.uk
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Forms of normality

A discussion about normalisation, and your preferred Access version

In the September column, I described two possible table structures for storing answers to multiple-choice questions and said both would hold data in third normal form (3NF), which means in first and second normal forms as well.

Robin Ball raised the question of whether the first table (see screen 1) was actually in 3NF. This is an excellent question, and one that goes straight to the heart of something that causes confusion in discussions about normalisation.

Looking at the table, the rule that springs to mind is one that determines whether a table is in first normal form (1NF). It's the one stating there must be no repeating columns in a table. What are all those columns for holding the answers to individual questions, if not repetitive? Let's look at another table (see screen 2) for comparison, which displays the same characteristic of apparently repeating columns.

This CourseAttend table stores details of which students are enrolled on various courses. There's a CourseID column that identifies the course and then a series of columns labelled StudentID01, StudentID02, etc. Note that the StudentID01 column does not imply that it refers to the first student to enrol for the course, nor to the best student – none of the StudentID columns imply positional or rank.

So what information can we glean from this table? We can, for example, see that course CTW405 has three students enrolled, those with IDs 3, 7 and 8. All we can learn from the table is the IDs of students signed up for a course. (The value 0 in this table is being used to indicate 'no student'. Would it be better to use a null? See the September 2008 column for more discussion on missing information).

SCREEN 1

PersonID	Q01	Q02	Q03	Q04	Q05	Q06
P1	a	d	a	c	a	d
P2	a	c	c	c	d	b
P3	b	c	d	d	c	c
P4	c	d	a	a	d	a
P5	a	a	c	b	a	a
P6	a	b	b	b	c	d
P7	c	d	c	b	a	b
P8	d	c	a	b	d	c

Record: 1 of 8

What happens if, for CTW405, we swap the value in StudentID02 with that in StudentID3. The information the table can give us remains unchanged: students 3, 8 and 7 are enrolled for CTW405.

Now look again at screen 1 and try a similar swap in the row labelled P1. If we exchange the value in the Q02 column with that in column Q03, we have altered the answers given by person P1. P1 answered 'd' for Question 02 and 'a' for Question 03, not the other way about, so the table no longer tells the same story.

We can sum this up by saying that while the StudentID01 column could contain the ID of any student, the Q01 column can only contain the answer to the first question. So the difference is that the question columns are not repeats because each one is pointing to a known, distinguishable object.

The design of the CourseAttend table therefore contains repeating columns and the table does not conform to first normal form. Despite the presence in screen 1 of multiple Qxx columns that appear repetitive, they are not repeating columns and so the table meets the requirements of first normal form.

It also meets the requirements of 3NF form, which is shorthand for

This table has many columns that look very similar, but are they repeating columns in terms of normalisation?

saying that it meets the requirements of first, second and third normal forms.

Simple solutions

In September's Question Time, I described an Access query to find all the jobs that have been finished in the past fortnight. I used this criterion in the date column to find the relevant entries:

```
BETWEEN DateAdd("d",-14,  
Date()) AND Date()
```

(Key: ⚡ code string continues)

Bill Brown emailed to suggest an alternative solution which seems, as he says, much simpler:

```
>=Date()-14
```

The SQL is:

```
SELECT JobID, EndDate  
FROM Job  
WHERE EndDate>=Date()-14  
ORDER BY EndDate;
```

This takes today's date, subtracts 14 from it and then returns any dates in the EndDate column that are greater than, or equal to, the date a fortnight ago. It certainly is a simpler construction and easy to understand. It also works – but only if there are no dates in the column later than today's date. If there are such dates, the 'greater than' operator returns all dates after (greater than) the date a fortnight ago, regardless of whether they lie within the 14-day period in which we are interested or beyond.

So, the solution you choose depends on the pattern of data you collect and the exact question you are asking. Thanks to Bill, Andy Mott – who asked the original question – now has a choice of three solutions, because Gareth Edwards offered another spin on the date manipulation, suggesting:

```
BETWEEN Now()-14 AND Now()
```

```
SELECT JobID, EndDate
```

SCREEN 2

CourseID	StudentID01	StudentID02	StudentID03	StudentID04
CTW405	3	7	8	0
CTM15P	6	8	12	14
CRT2009	2	3	4	7
*	0	0	0	0

Record: 1 of 3 No Filter Search

FROM Job

WHERE EndDate Between Now() -14 And Now();

and asking whether my solution had any advantages over this one. No, in fact Gareth's solution has the advantage of being easier to understand at first glance. There may be speed implications with any of these solutions because they all use comparative operators. I haven't done any time trials and if anyone out there fancies doing some, please let me know your results. All three queries (see screen 3) are in the file DbcNov08.mdb on the cover disc.

Preferred choice

A few months ago I asked readers to express a preference for the version of Access I use to illustrate the column, and whether coverage of SQL Server is of interest. The results are in and this is what you said.

Of people expressing a preference between Access 2003 and 2007, the ratio was 2.5:1 in favour of Access 2003, our stable, trusted friend. Many people appeared to be displeased with Access 2007 and it's clear many have decided not to move. One feature that came in for stick is the multivalued data type: Peter Lawton made the very good point that using them will render any upgrade path difficult.

Almost everyone was also in favour of SQL Server coverage – 95 per cent of respondents, in fact. Jeremy Flooks asked for discussion of upgrading to SQL Server, and Steve Mansfield wants to know what's new and funky in the latest version. The Express

There are more similar-looking columns in this table

edition of SQL Server was also mentioned as of interest.

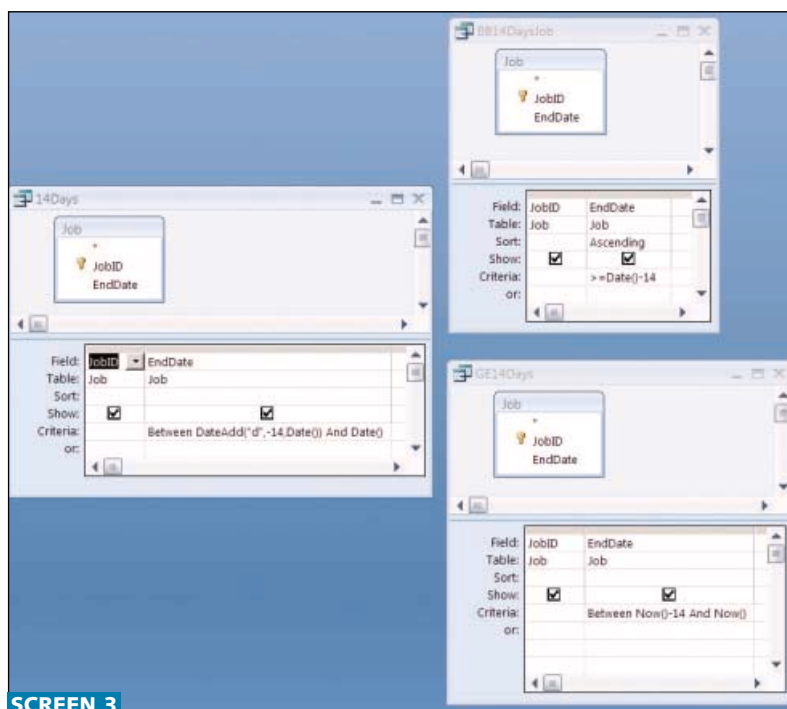
The Databases column will continue, as it has always done, to concentrate on database issues rather than exploring the interfaces of particular RDBMSs. As you know I rarely tell you which button to push, but frequently delve into areas such as the theory behind relational databases (as in this month's pieces on normalisation and date handling), which is relevant to any RDBMS. Although I use Access to illustrate such topics, similar functions, constructions and methodologies will be implemented in other RDBMSs.

'I must admit I was surprised by the enthusiasm for SQL Server'

The Databases column has always been keen to promote transferable skills, enabling readers to get more out of whichever database they use.

So what will change? Well, I'll take screenshots in Access 2007 but will

All three queries are shown here in Design view



supply .mdb files in Access 2000/03 format. Users of 2000/03/07 should all be able to open the files and convert if they wish. I must admit I was surprised by the enthusiasm for SQL Server coverage: in response I'll highlight the reasons to use it below.

Why upgrade?

There are several reasons to upgrade:

- 1) A proportion of the readership is made up of enthusiasts keen to try something new;
- 2) Understanding SQL Server is a highly saleable skill. Being able to create and manipulate Access databases is very saleable: add knowledge of SQL Server and you have an even more desirable skillset;
- 3) Access is an enormously competent RDBMS, but it has limitations in the size of database it can handle effectively and, more seriously, in the number of concurrent users it can support; and
- 4) Huge amounts of what Access users already know is transferable to SQL Server – normalisation, referential integrity, primary and foreign keys.

What would I need?

SQL Server Express Edition is a good place to start. It's free to download from www.microsoft.com/sql/editions/express/default.aspx and it runs under Windows XP (with SP2 or later) and Vista.

Is it like Access?

Yes and no. It stores your data in the same robust, relational fashion, but it does not have the user-friendly query grid, nor the form and report designers. These extras are not part of a database engine and SQL Server takes its role to be the storage, management and maintenance of the raw data. You are free to use whatever software you wish to design the user interface to the raw data.

Upsizing a database

You can either convert them manually or, to be recommended, use a tool to automate the bulk of the task. I've mentioned MUST (Migration Upsizing SQL Tool) in previous columns, see www.upsizing.co.uk. It's an excellent example of such a tool. Once you've migrated the data, you can connect to it from Access and create forms and reports inside the familiar Access environment. PCW



Tim Anderson is an IT journalist and software developer, and began writing for PCW in 1993. Since his first Commodore Pet, he has acquired expertise in Rad programming, Windows and the Internet.

→ Comments welcome on the Visual programming column.
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Debugging PHP on Windows

How to use Eclipse to debug your PHP scripts on Windows

PHP is a great web development language, but it can be awkward to test and debug. Unlike ASP.Net and Visual Studio, there's no standard PHP IDE, and developers take a variety of approaches. The old trick of using functions such as `echo` or `var_dump`, to output current values to the browser for testing, still works, but it is more arduous than using a proper debugger, especially when you need to trace a complex execution path. It is worth setting up a PHP debugging environment on your own machine, though, so you can develop and test in convenience and safety.

The option I've picked for this tutorial is Eclipse, the free tools platform best known as a Java IDE. Eclipse has a huge range of add-ons, one of which is the PHP Developer Tools project (see screen 1). Eclipse is not the whole answer, though. To set this up, you need Wamp (Windows, Apache, MySQL, PHP), a PHP debugger and Eclipse.

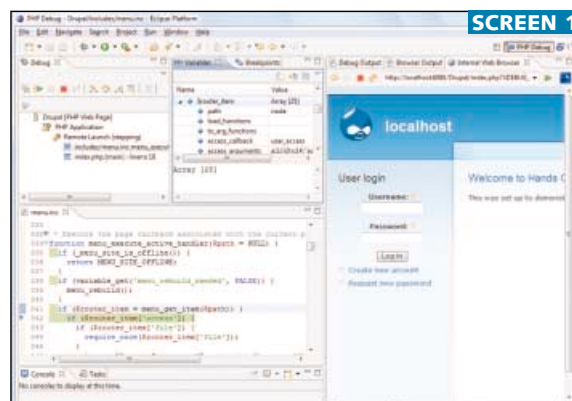
Preparation

There are a few tools that are useful for working with Linux or Mac files on Windows. When extracting archives, the tool that is built into Windows sometimes has problems with Unix archives and doesn't support all the formats you might need. However, you can pick up Grab 7-Zip from www.7-zip.org, which works perfectly.

Another annoyance comes when you try editing Linux text configuration files in Notepad. Windows has another way of dealing with line endings and runs all the text together. Install Notepad++ from <http://notepad-plus.sourceforge.net>, or another suitable editor.

Java

Eclipse won't run without Java, and it makes sense to get the official Sun version from www.java.com. Eclipse



Debugging PHP with a debugger is worthwhile and can be set up for free

recommends a Java 5 JRE (Java Runtime Environment), but in my tests, the latest version 6 worked fine.

Eclipse

Download Eclipse from www.eclipse.org/downloads. The Eclipse Foundation released a new version, called Ganymede, this summer. The download you want is the Eclipse IDE for Java EE developers (see screen 2), which includes web application tools.

Eclipse is almost zero install – just extract the zip archive into a convenient folder and double-click `eclipse.exe` to test it. You may be prompted to select a JRE, in which case, choose the Sun option.

XAMPP

Setting up a Wamp stack can be a bit fiddly, but thanks to the people at www.apachefriends.org, you can download a complete, ready-to-go environment.

This is the Eclipse you want – complete with web tools



One of the advantages of XAMPP (see screen 3) is that it has little impact on the rest of your system. There's an installer, but I prefer the self-extracting archive. Unpack this to a top-level folder such as `c:\xampp`. You may end up with a nested folder such as `c:\xampp\xampp`; in this case, fix it by moving the nested folder to the top level so there's only one XAMPP folder.

If you have some of the components installed, you lose the tidiness of the XAMPP setup. Ideally, remove them; if you need them for other purposes, you could change the port numbers for conflicting services or use Virtualbox (see box opposite) for a completely isolated testing environment.

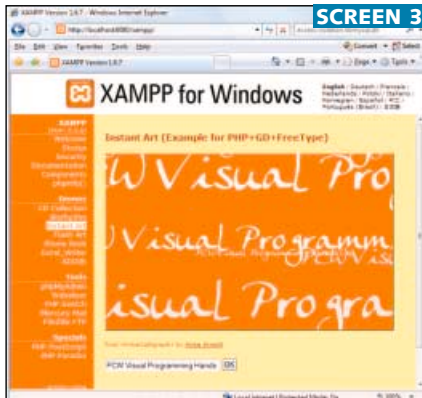
For example, if IIS is running on port 80, ideally stop the service before running XAMPP. Otherwise, open `C:\xampp\apache\conf` and search for the `Listen` directive. Change the port to, say, 6080, then search for `Servname` and change the port to the same number. Unfortunately, this breaks the Admin button in the XAMPP control panel.

XAMPP is not intended for deployment – only for development – and by default is insecure. This means you shouldn't run XAMPP on a PC that is publishing services to the internet. You can secure XAMPP somewhat by going to the security page in the web-based configuration and following the steps there. At a minimum, set a password for MySQL.

If you've installed in a top-level folder, running XAMPP is just a matter of double-clicking `xampp-control.exe` – from there you can start or stop each component. Only Apache and MySQL are used in this tutorial.

PHP Development Tools

PHP Development Tools (PDT) are not yet fully integrated with the Ganymede release of Eclipse.



XAMPP has all you need to run Apache, MySQL and PHP on Windows

Download the latest integration build of PDT 2.0 from <http://download.eclipse.org/tools/pdt/downloads> and extract the Zip, then run Eclipse and choose Help, Software updates, Available software. Click Add site, then Local, then browse to the folder you extracted. Click OK. The PDT feature will now be listed. Check this and click on Install. Restart Eclipse when prompted.

When PDT is fully updated for Ganymede, you'll be able to add an online update site. See <http://wiki.eclipse.org/PDT/Installation> for the current details.

Configure the debugger

There is no debugger included with PDT, but XAMPP includes XDebug (see screen 4), although it's not configured. If you're using another PHP install, visit www.xdebug.org and download the correct Windows Module for your version of PHP. This is a DLL. Copy it to the ext folder in your PHP installation.

Next, navigate to `phpinfo()` from the XAMPP home page and check the location of your active `php.ini` file, in the 'Loaded configuration file' section. Open this file in an editor. Comment out all the entries in the [Zend] section, then uncomment all the entries in the [XDebug] section, verifying that the dll in `zend_extension_ts` exists. Set `xdebug.profiler_enable` to 0 (rather than the default 1) for normal use, as otherwise it generates very large files.

Now restart Apache and go back to `phpinfo()`. It should say 'with Xdebug' near the top and have an xdebug section lower down; otherwise, check the configuration again.

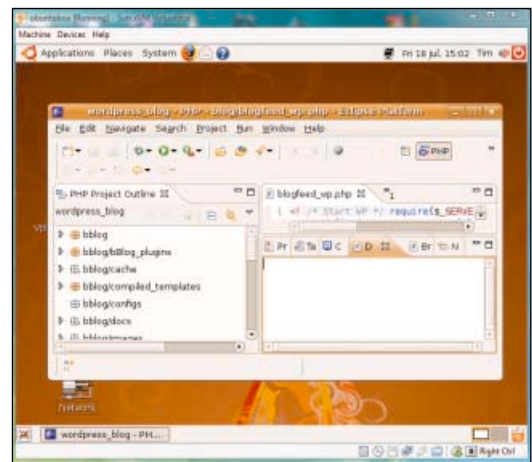
Create an Eclipse project

Before debugging in Eclipse, check a couple of configuration details. Open

Debugging PHP on Virtualbox

There are a few disadvantages to setting up a fiddly debug environment for PHP on Windows. First, if you're deploying to Linux, the differences between the two can get in the way. Second, things such as conflicting port numbers complicate matters. Third, if your drive fails or you reinstall Windows, you have to do it all again.

Using a virtual machine solves all these problems. Sun's open-source Virtualbox is a great choice and performs much better than Microsoft's Virtual Server, although either will do. If your PC is well-specified, then setting up a new virtual machine with something like Ubuntu Linux is as quick as or quicker than messing around with an existing Windows system. The easiest way is to download the setup ISO, or CD image, and boot a new virtual machine from it. The virtual machine can be dedicated to the exact purpose, and the virtual image is moveable between machines. Another advantage is how easy it is to flatten the



A virtual machine can solve debugging problems

machine and start again when things go wrong. Of course, you can also install Windows on Virtualbox, provided you have the requisite licence, and it is ideal for testing applications and installers on different machines. Recommended.

Window – Preferences. In the PHP section, verify that XDebug is listed under Installed Debuggers and that the port number matches the one in `php.ini`. In PHP servers, verify that the URL of the local server is correct; you may need to add a port number if this was changed.

Now create a new PHP project. Enter a project name, then uncheck the option under Project contents to 'Use default', and instead browse to the folder that contains the PHP project to debug; with XAMP, this would likely be a folder under `c:\xampp\htdocs`. For a new project, create a new folder.

If you select an existing PHP folder, you'll be warned that it contains files and so will be invited to create a new

Configuring a project for debugging

sub-folder, but this isn't what you want. Change it to the location that contains files, but note the warning that if you delete the project, you may also delete them.

Start debugging

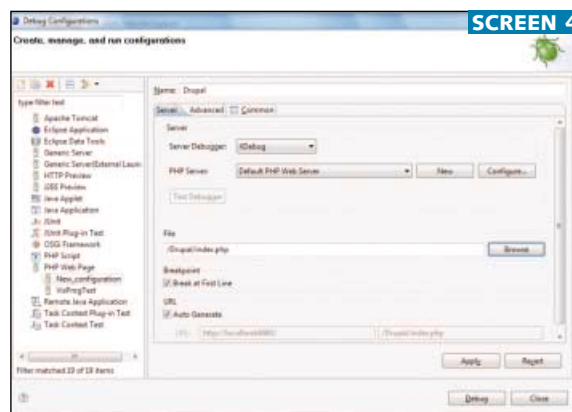
In Eclipse, open Run, Debug configurations. Click the new configuration icon at top left. Set the server debugger to XDebug, then select a file in your project to debug, normally the start page.

Click Apply and then close. Now select the new configuration from the Debug menu (the bug icon) and you can start debugging.

Allow Eclipse to open the PHP Debugging perspective, and you'll be able to step through code, set breakpoints, inspect the value of variables, see the call stack and more. It's worth experimenting with the browser settings, which can be either internal or set to a browser of your choice. This also lets you debug your application with different web browsers. Yes, it takes some effort to set it all up, but the time is soon repaid by making it quicker to identify where a PHP application is going wrong.

Resources

Find XAMPP at www.apachefriends.org
Find Eclipse at www.eclipse.org PCW



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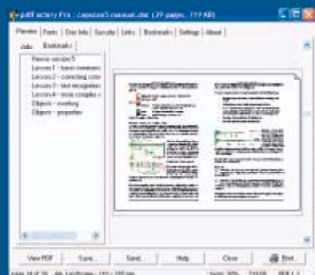


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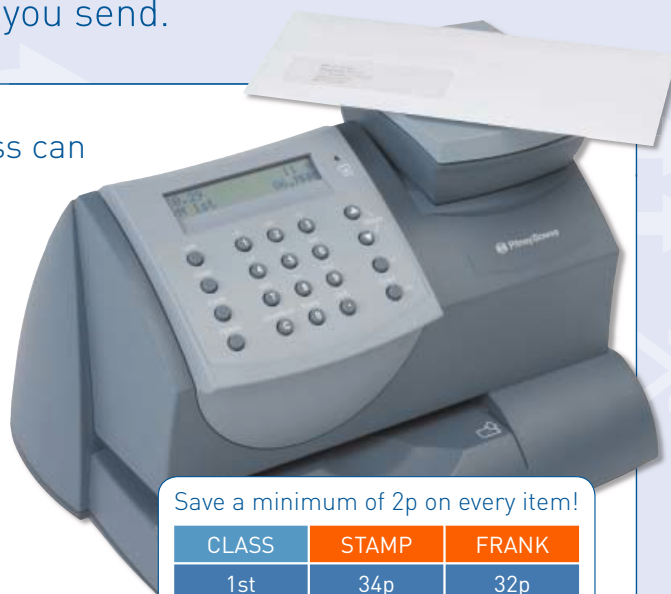
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Save a minimum of 2p on every item!

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2nd	24p	22p

Product shown: DM50 Small Office Franking Machine.

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DUP-07

DUP-11

DUP-15

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www.primera warranty.com



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SO WHY WAIT? www.pcw.primerainfo.com

ON THE CD

Iolo Drive Scrubber 3.5 ● Actinic Catalog LE 9
● PC Tools Spyware Doctor 6 Starter Edition ●
Titan Backup 1.5 ● Fotoinsight Designer 3.3



ON THE 8GB DVD

Paragon Hard Disk Manager 8.5 SE ● Iolo Drive
Scrubber 3.5 ● Actinic Catalog LE 9 ● PC Tools
Spyware Doctor 6 Starter Edition ● Titan Backup
1.5 ● Fotoinsight Designer 3.3



Let our workshops on the following pages show you how to use some of the software on the CD and DVD

COVER DISC

HELP LINES

WEB:

www.pcw.co.uk/disc-support

EMAIL:

help@pcwsupport.co.uk

PHONE: 01702 668 198

(9.30am to 5pm Mon, Tues,
Thurs & Fri; open until 8pm
on Wed & 10am to 2pm Sat)

Note that we cannot give support
for programs on the disc

SOFTWARE LISTING

ON THE CD

5 FULL VERSIONS

Iolo Drive Scrubber 3.5
Actinic Catalog 9 LE
PC Tools Spyware Doctor 6
Starter
Titan Backup 1.5
FotoInsight Designer

10 TRIAL VERSIONS

Iolo System Mechanic Pro 8
MacDrive 7.2
PC Tools Disk Suite 2009
PC Tools Internet Security
2009
PC Tools Registry Mechanic 8
PC Tools Spyware Doctor
6.0.0.362
PC Tools Spyware Doctor
with AntiVirus 6.0.0.362
Spy Sweeper 5.8
Titan Backup 2.1
Webroot Secure Backup

FROM THE MAGAZINE

Scribus 1.3.3.12
SpamCombat 2.7

Spamfighter 6.3.21
Spamihilator 0.9.9.41

FREWARE

AbiWord 2.6.4
Adobe Media Player 1.1
Amazon Watcher 0.3.5
Avira AntiVir Personal
8.1.0.236
Belarc Advisor 7.2.24.6
Comodo BOClean 4.27
DiskAid 1.21
Drivelmage XML V1.3
EditPad Lite 6.4.2
Evernote 3.0.0.681
FileZilla 3.1.0
FileZilla Portable 3.0.11.1
Flock 1.2.4
Forecastfox 0.9.7.7
Fresh Diagnose 7.86
Fresh UI 8.11
Glary Utilities 2.6
GMail Drive 1.0.13
IE PassView 1.09
Incredimail 5.8
Internet Download Manager
5.14
iQ-Notes 3.65

Malwarebytes' Anti-Malware
1.21
MediaPortal 1.0 RC
Mini Map Sidebar 0.3
Miranda 0.7.8
NoScript 1.7.7
Notepad 5.0.1
NoteTab Light 5.7
NSIS 2.38

ON THE 8GB DVD

EVERYTHING ON THE CD PLUS...

FULL VERSIONS

Paragon Hard Disk Manager
8.5 SE

TRIAL VERSIONS

Norton AntiVirus 2009
Preview
Norton Internet Security
2009 Preview

FREWARE

Apple iTunes 7.7
Studioline Photo Basic
3.50.44

FROM THE MAGAZINE

FreeNAS LiveCD 0.69
SmoothWall Express 3

LINUX & OPEN SOURCE

Belenix 0.7.1
CentOS 5.2 Live CD
Damn Small Linux 4.4.3
Mandriva 2009 Gnome
Preview 1
Mandriva 2009 KDE Preview 1
NimbleX 2008

RESOURCES (OVER 100 APPS)

Backup
Business
Developers
Internet
Media
Security
Utilities

GAME DEMOS

Code of Honor 2 Conspiracy
Island
Death Track Resurrection
SilkWood
Space Siege



INFORMATION

System requirements Windows XP/Vista, 10MB disk space

Contact www.iolo.com

Registration Obtain a serial number first at www.iolo.com/cads, then select 'I own Drive Scrubber...' during installation and enter your registration details

Need to know Your Iolo Drive Scrubber licence will expire 12 months after installing the program

Iolo Drive Scrubber 3.5

Securely erase confidential data so it can never be recovered

U sernames, passwords, financial details, work documents – most PCs contain all kinds of confidential information you really wouldn't want to share with others. But if your system is stolen, or you sell on an old PC or hard drive when you're finished with it, that could be exactly what you're doing – unless you take the precaution of using Iolo Drive Scrubber.

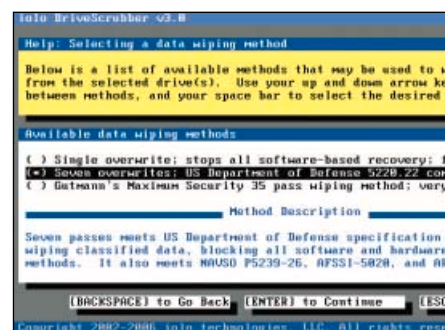
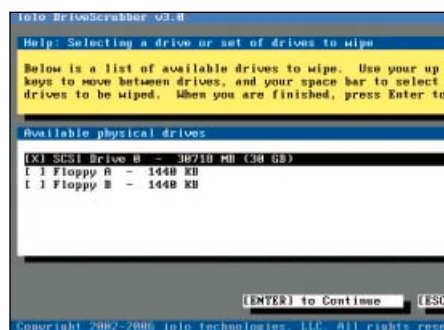
If it's working on an active PC, Drive Scrubber can be used to securely erase any hard drive directory entries pointing to deleted files – a speedy process that makes it difficult to recover any data. But if you need the best security, you can run a deep clean that overwrites all free and slack space on the drive. It will take an hour or so, but once finished you can be sure that any deleted files are gone forever.

Of course, if you're looking to sell a PC, hard drive or other storage device, then you'll want to go further still, and Drive Scrubber can help here, too.

At its simplest the program will erase every sector on a drive completely, preventing any data from being recovered. Use it on USB Flash storage as well as hard drives to ensure your privacy is protected.

Wiping the system drive of a PC is more difficult: some files will be in use so Windows won't allow it. Drive Scrubber can get around this, though, by letting you create a bootable CD or floppy. Start your PC from that disc and you'll launch a simplified custom version of Drive Scrubber that will wipe the system drive for you (see below).

Wipe your hard drive before reselling it



1 It's regularly reported that the majority of second-hand hard drives sold on sites such as Ebay still contain confidential data left behind by the previous owner. Drive Scrubber can help you avoid making the same mistake. Click Create Drive Scrubber boot disk and follow the instructions to create a boot CD.

2 When you need to wipe the drive – and you're sure you've retrieved everything important from it – then boot from the disk you've just created (you may need to change your Bios setup program 'Boot order' settings before this will work). Press Enter to begin, choose the drive to wipe and press the space bar so it's checked.

3 Press Enter and choose your data-wiping method. The default 'single overwrite' is fast, but not completely secure. We'd recommend choosing 'seven overwrites' for the best results (it'll take a while, but then you'll only do this once). Press Enter again, follow the instructions, and your hard drive will be securely wiped clean.

READER OFFER

NEW FEATURES

Repair PC problems
Accelerate system speeds
Free up hard drive space
Advanced spyware protection
Optimise your Registry
Improve internet performance

SAVE 50% ON IOLO SYSTEM MECHANIC 8

Iolo System Mechanic is the all-in-one PC maintenance tool that provides everything you need to make your PC run like new. It can repair Registry and hard drive problems, accelerate your system start time and internet speed, clean up junk files, defragment your hard drive and Registry, fix PCs that won't start, detect and remove spyware, and a whole lot more. You can get System Mechanic 8 for 50 per cent off the standard retail price. See your registration email from Iolo for further information.



INFORMATION

System requirements 1GB Ram (2GB Vista), Windows XP SP2/Vista, Internet Explorer 6, 120MB disk space

Contact www.actinic.co.uk

Registration Follow the instructions during installation

Need to know Your store is limited to 25 products

Actinic Catalog LE 9

Design, build and manage your own online store with ease

A lethal combination of the credit crunch and rising fuel and food prices has helped turn the high street into a retail disaster area. Internet sales growth is still impressive, though, as the country heads online to look for better deals. There has never been a better time to get involved with your own web store, and Actinic Catalog LE 9 is exactly what you need to help get your new business venture off the ground.

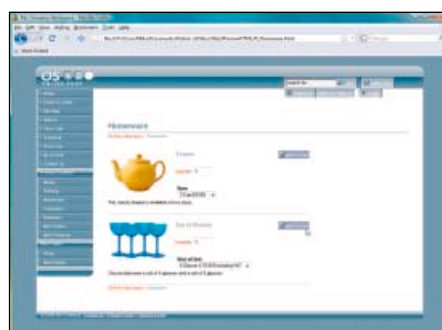
There's no need to worry about site design, for instance, as the program comes with a wide range of ready-to-use templates. These can all be customised with a choice of more than 50 colour schemes, and you can tweak other elements on the page – company logo, say – to give your site a truly unique look.

You get plenty of control over the way in which products are displayed on the site. You can enter a product name, description, add a thumbnail and larger image, use pop-up pages with further information, and a whole lot more.

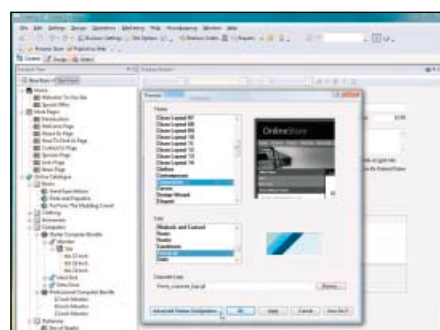
This version of Actinic Catalog lets you add a maximum of 25 products to your store, but that's not as restrictive as you might think. You can vary any item you sell by giving it attributes, so, for example, you might sell a t-shirt design in five sizes and six colours, but it still only counts as one product towards your 25 limit.

The program walks you through the process of setting up discounts, taxes and shipping costs. It'll put your site online, collect orders, manage stock and more, providing just about everything you need to run an effective online business.

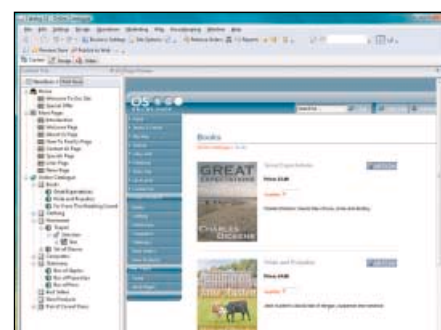
Become the next retail success story with your own web store



1 Creating a great online shop takes time, even with Actinic Catalog, so we'd recommend you get started by practicing with the example store that comes bundled with the program. Click Web > Preview Store to get a feel for how that will look with the program's default settings.



2 The store looks professional, but may be a little plain for some tastes. If you'd like something more, click Design > Themes and choose a more appealing colour scheme. Click Advanced Themes Configuration for more options, previewing the results to check what you've done.



3 Browse the left-hand content tree, expanding 'More Pages' to create pages such as 'About us'. Right-click one of the catalogue sections, click New Product, and complete the dialogue box with details of one of your own products. Keep previewing and you'll soon see how it all works.

UPGRADE OFFER

NEW FEATURES

Up to 20,000 products
Advanced discounting features
Customer-specific pricing
Dynamically link to databases
Integrate with accounts packages
Ecommerce-Epos link

SAVE £100 ON ACTINIC BUSINESS

If you've outgrown the 25 product limit, you could always upgrade to Actinic Catalog. It supports up to 20,000 products with an unlimited number of variations, such as size and colour. The standard price is £399 ex Vat, but as an owner of the Catalog 9 LE version you'll get a £50 discount. For real power, you could move to Actinic Business, which adds extra marketing and customer management features, as well as links to products such as Quickbooks and Safe Line 50. This costs £799 ex Vat, but you'll get £100 off. Phone 0845 129 4800 or email sales@actinic.co.uk, quoting 'Catalog 25 offer' to qualify for this deal.



Paragon Hard Disk Manager 8.5 SE

All the hard drive management functionality you'll ever need

Partitioning, cloning, backup, defragging, recovery: managing your hard drive requires many different functions and a library of tools. Install Paragon Hard Disk Manager 8.5 SE and you'll get a cluster of useful hard drive tools in one easy-to-use interface.

A powerful set of partitioning functions will help you divide your hard drive, for instance, which is useful if you'd like two bootable operating systems on the same PC. You'll be able to move, copy, resize or delete a partition, and even undelete a partition that has been wiped by accident. This function can even be completed from a bootable CD created by the program – handy if your hard drive has been corrupted and the PC no longer starts.

If you've decided to upgrade your PC with a larger, faster hard drive, you'll want to use the Hard Disk Manager cloning function. This copies the old hard drive and boot structures on to the new one. You could even use Hard Disk Manager as a daily backup tool: it can make an image copy of the entire hard drive, or you can speed things up with a differential backup, which only copies files that have changed recently.

There are also tools to defragment your hard drive, run a surface test to check for errors, or directly edit hard drive sectors. And the program provides a host of useful functions you won't find in Windows – from the ability to speed up NTFS drives by defragmenting the Master File Table, to converting NTFS drives back to Fat 32, change the cluster size on a drive, and more.

INFORMATION

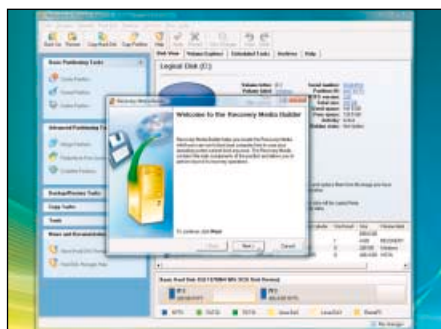
System requirements Windows

98/2000/XP/Vista, 40MB disk space

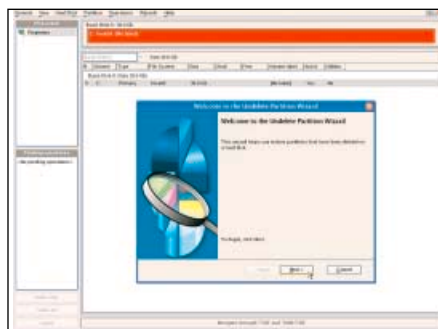
Contact www.paragon-software.com

Registration Click the Registration button during installation

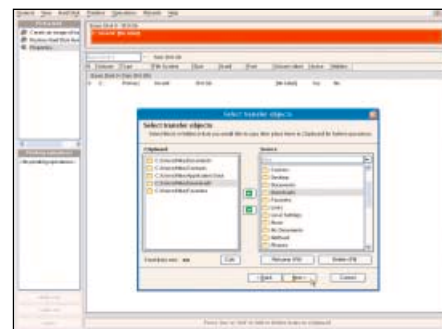
Fix a corrupted hard drive with Hard Disk Manager 8.5



1 A single changed byte in the system areas of your hard drive can be enough to prevent your PC from booting up, so it pays to be prepared – and Paragon Hard Disk Manager can help. Click Tools > Recovery Media Builder, follow the instructions, and the program will create a bootable recovery CD.



2 If your PC won't boot in future, then boot from the recovery CD instead. If it can still read the hard drive there's at least some hope of retrieving your data. Options such as Partition > Undelete can recover a lost partition, while Hard Disk > Update MBR will rewrite system areas of the hard drive.



3 Click Partition > Check file system integrity to look for any corrupted files, or select Partition > Retest Surface to detect flaky areas of your hard drive. If nothing works, then try Wizards > Backup Wizard to restore a previous backup, or Wizards > File Transfer Wizard to retrieve key files.

READER OFFER

FEATURES

- Real-time drive backup
- Effective disaster recovery
- Migrate your data online
- Erase your data securely
- Optimise hard drive performance
- Enterprise imaging and deployment

SAVE 20% ACROSS THE PARAGON RANGE

Hard Disk Manager Special Edition is just one of Paragon's feature-packed products. The range also includes Drive Backup, a speedy image backup tool. Disk Wiper securely erases files so they can't be undeleted later. And Total Defrag 2009 reorganises the files on your hard drive to ensure you're getting the best-possible PC performance. Prices start at around £13, and you get a 20 per cent discount if you order within seven days of registering Hard Disk Manager. See your registration email for the promotional code.



Titan Backup 1.5

Save emails, settings or an entire hard drive with this backup tool

Running backups will always be tedious, and there's nothing Titan Backup can do about that. The program does, however, help get the whole experience over as quickly and efficiently as possible, thanks to a complete feature set that offers just about every backup function you could possibly need.

There are multiple ways of specifying the data you'd like to back up. For example, you might choose to back up a particular file type: all the music files, videos, images or productivity files on your system. You can back up all or selected parts of the Registry, opt to save your email and application settings, or specify the files and folders you'd like the program to copy.

There's support for all the usual backup destinations: local or network drives, removable

devices, CDs, DVDs or a remote FTP server. Backup files may be compressed to improve performance, saved as self-extracting archives, and encrypted for security. And you get a variety of backup types: Incremental will back up only changed files; Differential deletes files in the backup if they no longer exist in the source location; and Stacked keeps older versions of altered files but assigns them version numbers.

There's also a capable backup scheduler that can even wake up your PC from standby before running a task (if your hardware allows), and you're able to define custom tasks that are run before and after the backup has been executed. It's a powerful mix of features, and a great way to protect your valuable data from PC disasters.

INFORMATION

System requirements Windows 2000/XP/Vista, 8MB free hard drive space

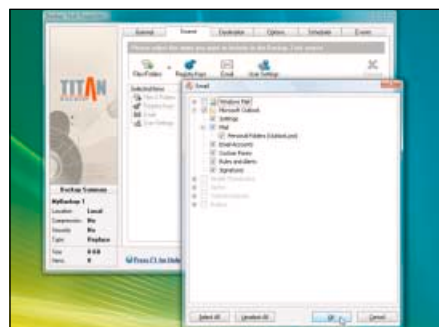
Contact www.titanbackup.com

Registration Enter the key 000020-ACM8KK-1Y3VMT-JZT4CH-YZEY5T-70PFJK-AXHHCV-UHFCFW to register the program

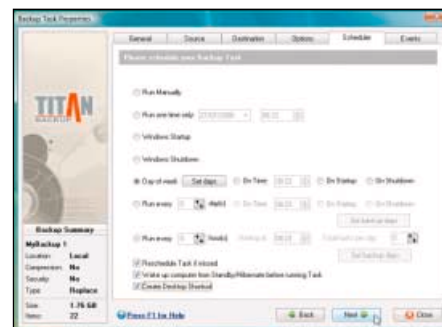
Run a useful backup job in under 10 minutes



1 Backups don't have to take forever. Opt to save just your key settings and you'll create a job that's over so quickly you can run it every day – real insurance against future problems. Click Backup to start, give the job a sensible name, then click the Source tab to specify what you'll be saving.



2 Close your email client if it's running, then click Registry and check all the boxes. Click Email, and check your client's box to save email, settings and more. Click User Settings and check the boxes next to any installed applications to save their settings, including your Internet Explorer favourites.



3 Click Destination and choose where the data will be saved. Click Options, enable Zip compression to save space, and perhaps encryption for security, then click Scheduler and decide when the backup job will be run. Finally, click Events > Finish and the job will be ready to protect your data.

UPGRADE OFFER

NEW FEATURES

Back up open files
AES encryption
Individual file compression
Back up more applications
Priority technical support
A year of upgrades

TITAN BACKUP 2.1

The latest version of Titan Backup adds support for Windows shadow copy service, which means it's able to back up files that are in use when the backup job is running. Improved AES encryption protects your data from snoopers, and there's support for backing up the settings of many more applications: Firefox 3, Opera 9.5, Adobe Photoshop, Dreamweaver and more. Best of all, the upgrade cost is a real bargain at only £7.50, and you can find out more at <http://www.titanbackup.com/special-offers/vnunet.html>.

Fotoinsight Designer 3.3



INFORMATION

System requirements Windows 2000/XP/Vista, 80MB disk space

Contact www.fotoinsight.co.uk

Registration Not required

Choose your photobook images, their layout, background and more with the Fotoinsight Designer

Digital photography has given us instant, quality photos at a low price, an end to the hassle of sending film off to be developed, and the ability to edit photos to suit. But the technology has taken something away, too. Many people's photos exist only in a virtual sense, to be watched on a screen, and simple pleasures such as pouring over old photos, reminiscing with family, seem to be a thing of the past. Fotoinsight Designer could be the answer.

The program is part of a commercial service that will take your digital images and turn them into just about anything – a mug, greetings cards, calendar, mouse mat, jigsaw, T-shirt (even

a mini version for teddy bears), cushion cover, shopping bag – the list goes on. Every product has multiple design options, so you're sure to find something you want.

Perhaps most impressive are the photobooks, professionally printed and bound creations that would make a great souvenir of a family occasion, such as a wedding. Just load your images and the program will lay them out, automatically fixing problems such as red-eye.

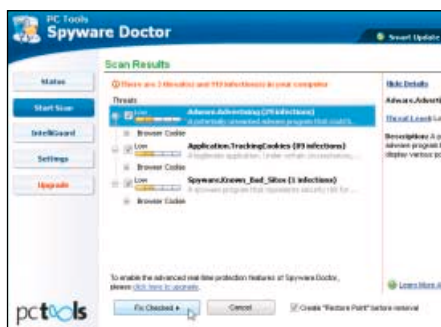
Prices are reasonable, too. A 26-page 21x28cm bound and printed hardback photobook costs £19.99 and prints will cost you from 10p each. Worth a look.

UPGRADE OFFER

SAVE 15% ON A PHOTOBOK

Fotoinsight's best product is a photobook, which can take hundreds of your best photos and display them in a professionally bound and printed hardback book, with anything up to 98 pages and a size of 30x30cm. There are plenty of variations available in size and page number, and you can have faux leather, linen or soft covers. Regular prices range from £5.99 for a small booklet to £34.99 for a full-size hardback, but now you can save 15 per cent off your first order – that's up to £5.25 per book. Just quote the voucher code PCW for this special deal.

PC Tools Spyware Doctor 6 SE



INFORMATION

System requirements Window 2000/XP/Vista, 60MB disk space

Contact www.pctools.com

Registration Once installed, click 'Register'

Need to know Full range of Intelliguard features not available in this version

Check the boxes next to the threats you want removed, then click Remove Checked to delete them

All the main anti-virus tools claim to detect spyware along with other threats, but tests show their effectiveness can vary. It's a good idea to install a specialist anti-spyware tool, ready to deliver a second opinion whenever required, and PC Tools Spyware Doctor is one of the best.

While some programs keep you waiting for an hour or more, Spyware Doctor by default uses an Intelliguard mode that checks only the most likely areas to be infected and can return a verdict in about five minutes. Full-system scans are available if you need them, and you can also construct a custom scan that checks only the areas you need: the HOSTS file, start-up programs, running processes, etc.

The results of a scan are categorised according to severity: low, medium or high. This helps you see at a glance whether there's anything to worry about, and there's plenty of information available on any problem the program uncovers.

And if on-demand scans aren't quite enough you can enable Spyware Doctor's real-time protection feature, Intelliguard. The Starter Edition only has a couple of Guards enabled, but fortunately they're two of the best. Immuniser Guard prevents known malicious ActiveX threats from running on your PC, while File Guard blocks you from launching malicious applications or opening dangerous email attachments.

UPGRADE OFFER

PC TOOLS SPYWARE DOCTOR

Move to the full version of Spyware Doctor and you'll gain improved real-time protection, with additional resident guards to monitor your browser and network settings, Windows startup programs, running processes and more. Or, if you like the program, you could try Spyware Doctor with Antivirus 6, which adds complete anti-virus protection. Prices are £29.95 for a 12-month Spyware Doctor licence, and £39.95 if you're choosing Spyware Doctor with anti-virus. Each licence can be used to protect up to three PCs. To find out more, visit www.pctools.com.

COMPETITION

WIN! A Medion Akoya S5610 Centrino 2 laptop

The Medion Akoya S5610 is a premium, slimline and lightweight 15.4in laptop.

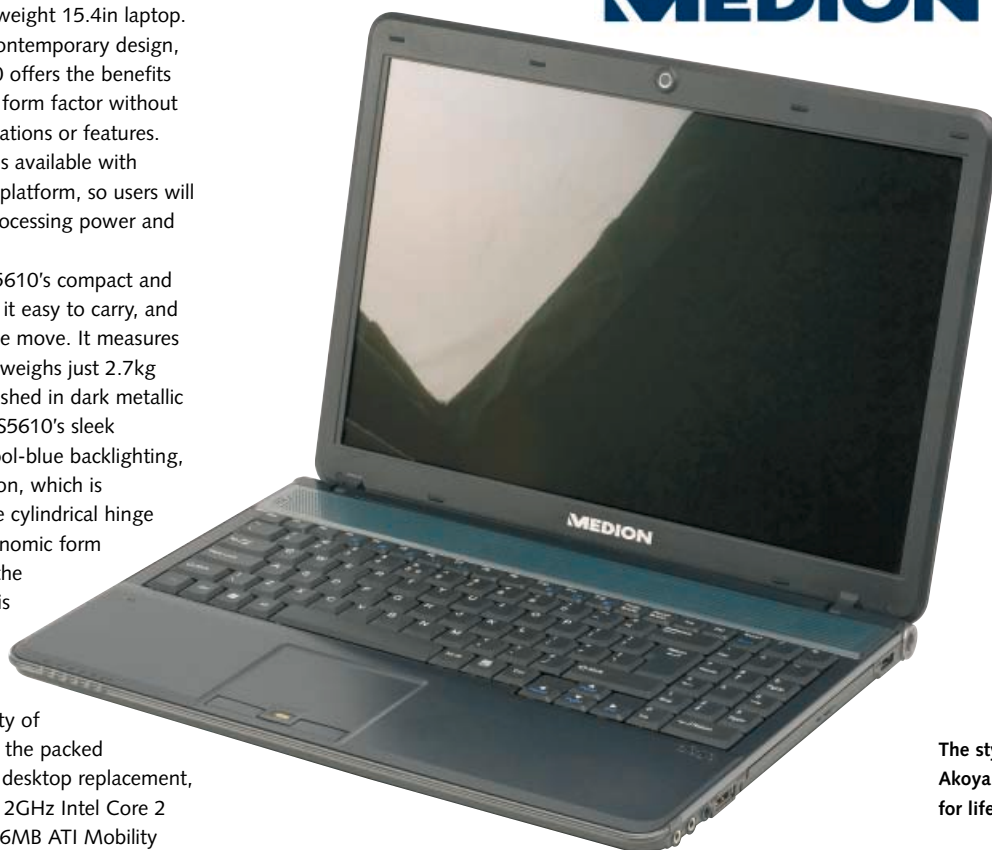
With its stylish, contemporary design, the Medion Akoya S5610 offers the benefits of a slim, highly portable form factor without compromising on specifications or features. It's one of the first laptops available with the new Intel Centrino 2 platform, so users will benefit from increased processing power and a longer battery life.

The Medion Akoya S5610's compact and slender dimensions make it easy to carry, and ideal for busy users on the move. It measures 365x265x22/34mm and weighs just 2.7kg including the battery. Finished in dark metallic grey, the Medion Akoya S5610's sleek looks are enhanced by cool-blue backlighting, including the power button, which is neatly incorporated in the cylindrical hinge barrel. This blend of ergonomic form and function extends to the laptop's trackpad, which is integrated seamlessly into the panel below the keyboard.

Combining the mobility of a lightweight laptop with the packed feature set of a powerful desktop replacement, the laptop incorporates a 2GHz Intel Core 2 Duo P7350 processor, 256MB ATI Mobility Radeon HD 3470 graphics, 3GB of memory and a 320GB hard drive. It's also equipped to handle the highest quality multimedia content, including 1080p high-definition output through the integrated HDMI port. The 15.4in TFT widescreen display, dual-layer DVD rewriter and high-definition audio means users can enjoy the latest movies when out and about.

The Medion Akoya S5610 also makes a versatile mobile workstation, with Intel Wireless and an Ethernet Lan port. Videoconferencing is enabled by the integrated 1.3-megapixel webcam and microphone, while a biometric fingerprint reader keeps the machine secure, preventing unauthorised users from gaining access.

MEDION® akoya®



The stylish and slimline Akoya S5610 is perfect for life on the road

The new Medion Akoya S5610 is available now from Sainsbury's stores nationwide. To find out more about Medion's range of products, head over to www.medionshop.co.uk.

For your chance to win one of two Medion Akoya S5610 laptops worth £600, answer the question below and enter online at www.pcw.co.uk/competitions. The competition opens on 4 September 2008 and closes on 3 October 2008.

How heavy is the Medion Akoya S5610?

- a) 2.7kg
- b) 3.2kg
- c) 4.7kg

This competition is open to readers of *PCW*, except for employees (and their families) of Incisive Media, and Medion. *PCW* is the sole judge of the competition and the Editor's choice is final. Offer applies to residents of the UK and the Irish Republic only. Entrants must be over the age of 18 and only one entry per household will be accepted. Winners will be selected at random from all correct entries received. No cash alternative is available in lieu of prizes. Incisive Media will use all reasonable endeavours to notify the winner(s) within 14 days of the close of the competition. Incisive Media reserves the right to substitute the prize for one of greater or equal value if circumstances make this unavoidable. Prizes will be dispatched by the competition sponsor(s) and the winner(s) name(s) and address(es) will be provided to the competition sponsor(s) for this purpose. No purchase of the magazine is necessary to enter the competition. Incisive Media will use all reasonable efforts to ensure that the prizes are as described on this page. However, Incisive Media cannot accept any liability in respect of any prize, and any queries regarding a prize should be taken up directly with the sponsor of that prize.

The winner of the August competition is Ron Weil, who wins a Panasonic Toughbook CFR-W7 laptop.

ENTER ONLINE AT www.pcw.co.uk/competitions

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10 tips for buying safely

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- 3 Keep good records, storing receipts, correspondence in one place.
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- 5 Goods ordered online, by phone or post can be returned under the Distance Selling Regulations without explanation within a reasonable time – this is widely accepted as being seven days.
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- 8 Companies cannot charge for a service that isn't being delivered, but never stop a direct debit while under contract.
- 9 Consumers should not suffer financial loss for repairs that are not their fault, so claim back carriage charges.
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Centrino 2 laptops

Intel's latest laptop platform is upon us and promises longer battery life, improved processor power and better handling of HD video. But is there really any reason to upgrade, or is it all hype? We find out by putting the first models through our rigorous labs tests.



Smartphones

Modern mobile phones let you browse the web, check your email, read office documents and much more, all in the palm of your hand. But can a smartphone really replace your trusty laptop? We check out the capabilities of the latest handsets.



Get to grips with virtual PCs

Want to run Windows XP on your Vista machine? Or Dos, or Linux, or even Solaris? Virtual PCs can let you run all of these at once on a single PC should you so wish, as we'll show you in this hands-on feature.

The state of privacy

Given the UK Government's habit of losing confidential data, we thought it timely for PCW to take an in-depth look at the issues surrounding digital privacy in the UK. Are the commentators right in suggesting that existing data protection legislation is no longer fit for purpose?



There's lots more in December's PCW DON'T MISS IT...

NOVEMBER 2003

From the archives: Take a look at the important events in technology five, 15 and 25 years ago.

Over cover feature on building the ultimate PC was quite an eye-opener at the time. We wrote about three DIY build ideas – a quiet PC for £553, a home entertainment PC for £1,644 and an ultimate mod PC that we didn't put a price to, perhaps because it was just looking at case modifications.

The spec of the quiet PC was not much different from the £99 PC we built in the July 2008 issue of PCW, although the £299 EPIA M10000 mini-ITX motherboard in the 2003 system would be no match for the new Celeron-powered Intel board we used. The home entertainment PC would be struggling today with its 2.6GHz P4 processor, 512MB of Ram and Radeon 9800 Pro graphics.



Our feature on modding the Microsoft Xbox to run Linux probably wouldn't go down well these days – at the time, a cottage industry was growing around selling modified Xboxes. The EU Copyright Directive came into force in October 2003, and a couple of years later a UK reseller was prosecuted for illegally selling 'chipped' Xboxes with pre-installed games.

In the Reviews section, we looked at one of the last times AMD stole a march on Intel, when it launched 64-bit processing for home desktops with the Athlon 64 processor. At the time Intel was stuck with the 32-bit Pentium 4, with only the Itanium offering 64-bit processing for high-end servers.

NOVEMBER 1993

In 1993, Britain was still in the grip of dinomania following the success of *Jurassic Park*. Such was our obsession with all things Jurassic, we devoted a feature to three of the latest dinosaur-themed CD-Roms.

In Reviews we looked at Toshiba's first multimedia portable PC, the 6600C, which came with integrated stereo speakers and a CD-Rom drive. By today's standards, the 6600C was about as portable as a paving slab, with its bulky 125mm-thick chassis weighing just under 6kg.

Notebooks have thankfully grown much lighter over the past 15 years, although some modern desktop replacements are comparable in weight. But it's easy to mock and forget that a CD-Rom drive in those days was almost as exotic in a laptop as a recordable Blu-ray drive would be today.

In News we reported on Gateway's intention to move to the UK to take on Dell, a move that lasted a few years before it retired back to the US and was bought last year by giant Acer – something no one could have predicted at the time.



NOVEMBER 1983

Spookily, given the recent rise of low-cost laptops, November 1983 was also the month of the sub-£100 computer. We reviewed Tandy's latest, the MC-10, concluding that while it looked like a cross between the Spectrum and an Oric, it was sadly lacking in the programming department. The £50 Mattel Aquarius fared better, leading us to conclude it was an excellent machine for the first-time user.

It was also the month when we got our first look at

Lotus 1-2-3, which became the de facto numbers application for the PC before Excel spoiled its fun. With its intuitive menus, it was the three-in-one spreadsheet, word processor and database credited with putting 'Help' on the F1 key.

In Newsprint, Guy Kewney talked about software piracy, although he admitted he had "no scruples about borrowing a diskette from somebody else". As he explained, this was at the time when software pirates could not be prosecuted, so hardware dealers copied disks and sold them to anyone who bought one of their machines. Cheeky.





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